ORDER NO. EMID881225
A4

Service Manual

PCM Digital Piano

SX-PX20

(M), (MC), (EN), (EI), (EH), (EB), (EF), (EZ), (EW), (EL), (EP), (EK), (XT), (XL), (XR), (XS), (XD), (X)

AREAS

(M):	U.S.A.	(EP):	Spain
(MC):	Canada	(EK):	the United Kingdom
(EN):	Norway, Sweden, Denmark, Finland	(XT):	Taiwan
		(XL):	New Zealand
(EI):	Italy	(XR):	Australia
(EH):	Holland	(XS):	Malaysia, Singapore, South Africa
(EB):	Belgium		
(EF):	France, Austria	(XD):	Saudi Arabia
(EZ):	Germany	(X):	the Middle East, Indonessia, Hong Kong, the Philippines, Thailand
(EW):	Switzerland		
(EL):	Finland		

Specifications

KEYBOARD	88 KEYS (16 NOTES POLYPHONIC)
TONE	PIANO 1, PIANO 2, E PIANO 1, E PIANO 2, HARPSICHORD, GUITAR, HARP, SYNTH 1/CLAVI, SYNTH 2/VIBETONE
BRILLIANCE	MELLOW, BRIGHT, NORMAL
EFFECT	CHORUS
TRANSPOSE	UP (+C♯, +D, +D♯, +E, +F, +F♯) DOWN (−B, −A♯, −A, −G♯, −G)
MIDI	MIDI PROGRAM CHANGE
MODE SET	MIDI.....OMNI ON, PROGRAM CHANGE, CHORUS, PEDAL OTHERS.....SOSTENUTO, MIN RANGE, PIANO TUNING
TERMINALS	MIDI.....IN, OUT, THRU AUX IN .....input level 500mV 100KΩ L, R/R+L LINE OUT .....output level 2V 600Ω L, R/R+L OTHERS.....PEDAL IN, HEADPHONE JACK, AC CORD
OTHERS	POWER SW, MAIN VOLUME, TUNE, INITIAL KEY
OUTPUT	20W×2
SPEAKERS	16cm (6-5/16″)×1, 12cm (4-23/32″)×1, HORN TWEETER×1
POWER REQUIREMENT	90W AC 120/220/240V 50/60Hz, AC 120V 60Hz (NORTH AMERICA)
DIMENSIONS (W×H×D)	137.8cm×80.2cm×46.0cm (54-1/4″×31-9/16″×18-1/8″)
NET WEIGHT	50.4Kg (111.1lbs.)
ACCESSORIES	STAND, AC CORD

*Specifications are subject to change without notice for further improvement.

Technics

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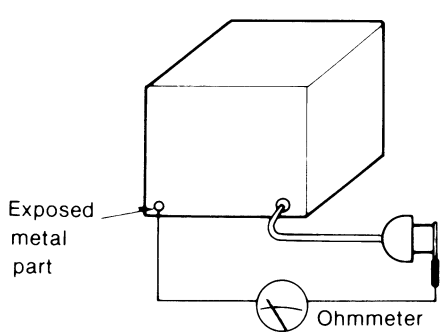
SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

• Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

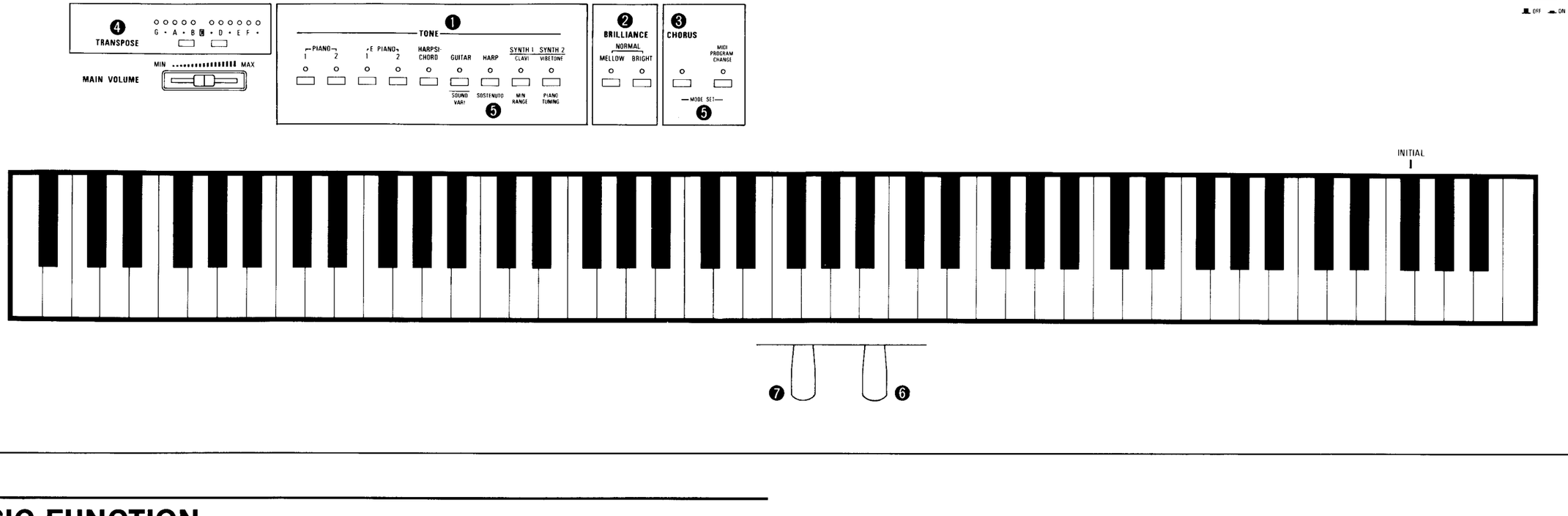
• Insulation Resistance Test

1. Unpulg the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc..
   Mesurements should range from 3MΩ to infinity to all exposed parts.



Resistance=3MΩ to ∞

ARRANGEMENT OF CONTROL PANEL



BASIC FUNCTION

❶ TONE

Eleven different tones produced by a PCM digital sound source can be selected.
Each voice features Touch Response, which increases the volume and changes the timbreas the velocity-sensitive keyboard is played harder.

❷ BRILLIANCE

The brilliance of the tone is increased by pressing the **BRIGHT** button.
The tone is softened by pressing the **MELLOW** button.
If both buttons are simultaneously pressed to turn them on, the brilliance returns to normal.

❸ CHORUS

The **CHORUS** effect expande the sound of one instrument to the sound of many instruments playing in unison.
Pressing this button alternately turns the **CHORUS** effect on and off.

❹ TRANSPOSE

C is the standard setting, and the key may be raised or lowered with the two **TRANSPOSE** buttons. The key can be reset to C instantly by pressing both **TRANSPOSE** buttons simultaneously.

- When **TRANSPOSE** is used, depending on the selected tones, the sound produced by some keys in the outer ranges may be raised or lowered by one octave.

❺ MODE SET

When the **MODE SET** buttons (**CHORUS** and **MIDI PROGRAM CHANGE**) are on, the following four modes can be set.

1. SOUND VARI
When the **SOUND VARI** button is off, the two far right buttons in the **TONE** section provide **SYNTH 1** and **SYNTH 2** tones. When it is on, the **CLAVI** and **VIBETONE** tones are active for these buttons.

2. SOSTENUTO
When this button is turned on, the soft pedal works as a **SOSTENUTO** pedal.

3. MIN RANGE
Pressing this button on broadens the range at low volumes.
If a key is pressed very slowly, it may not produce any sound.

4. PIANO TUNING
When this button is on, the sound is a little lower for low notes and a little higher for high notes as on a regular piano.
When it is off, the tuning is even.

- On the PX20, modes set using these procedures will return to the standard settings when the power is turned off.

❻ SUSTAIN PEDAL

When a key is released while this pedal is depressed, the sound is sustained so that it lingers and slowly fades out.

- The tones of the far right keys are automatically sustained just like in an acoustic.

❼ SOFT PEDAL

When the pedal is depressed, the sound is softer and the volume is lower.

- The soft pedal can also be used as a **SOSTENUTO** pedal.

CONNE

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■ TUNE

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■ PEDAL IN

Connect the o
terminal.

■ AUX IN (input

Other instrume
sound module
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To receive mon
the R/R+L ter

■ LINE OUT (ou

By plugging in
power amplifie
high volume. (U
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■ PHONES

For silent prac
When plugged
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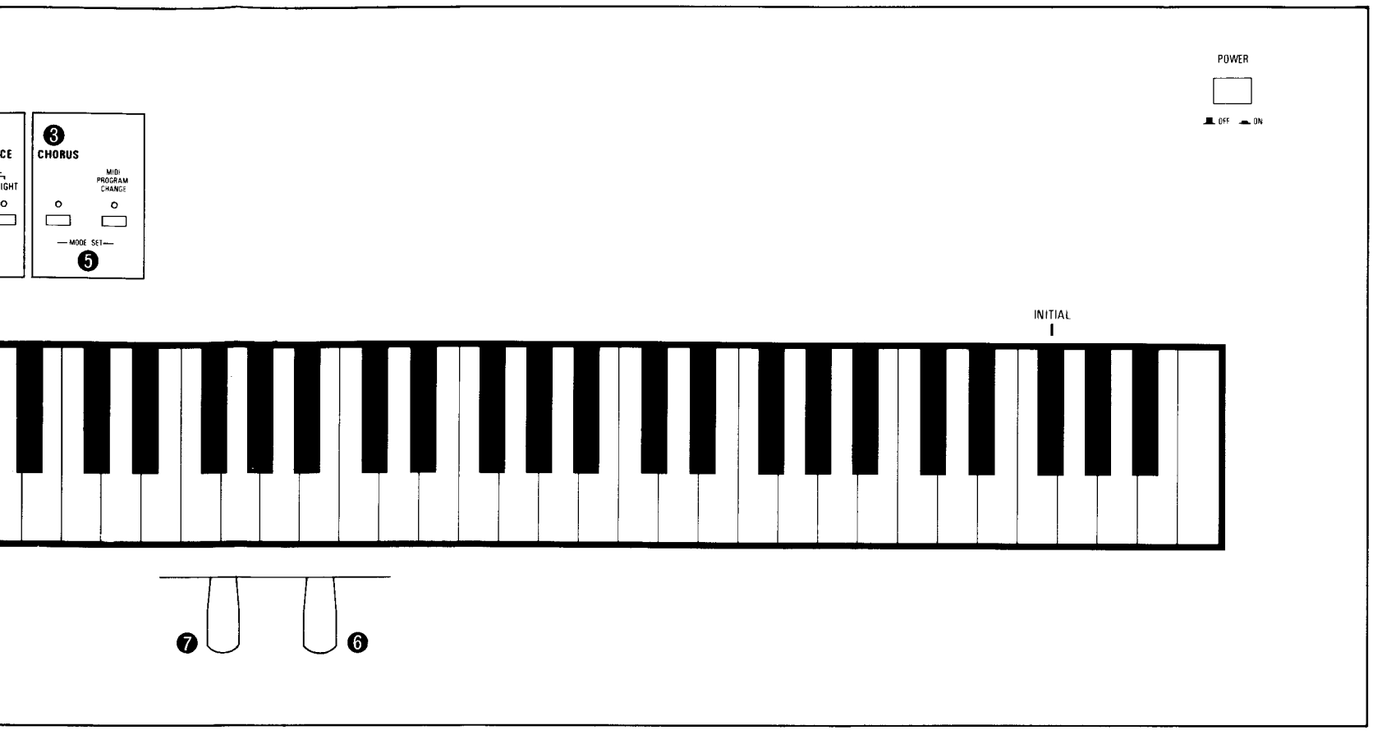
headphones.



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HORUS and **MIDI**
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When a key is released while this pedal is depressed, the sound is sustained so that it lingers and slowly fades out.

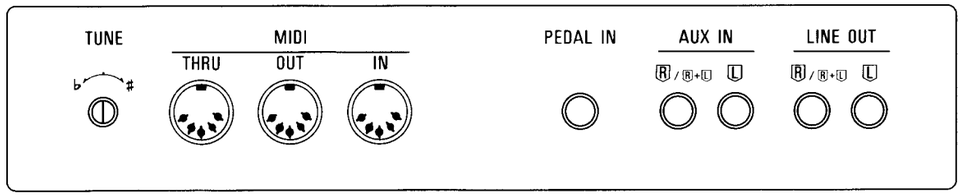
- The tones of the far right keys are automatically sustained just like in an acoustic.

❼ SOFT PEDAL
When the pedal is depressed, the sound is softer and the volume is lower.

- The soft pedal can also be used as a **SOSTENUTO** pedal.

CONNECTION TERMINALS

(On the rear panel)



■ TUNE

During an ensemble performance with other instruments, fine adjustments of pitch can be made using this knob.

■ PEDAL IN

Connect the cord from the included stand to this terminal.

■ AUX IN (input level 500 mV, 1 KΩ)

Other instruments such as a rhythm machine or sound module can be connected to the piano so that the sound is output from the piano.
To receive monaural sound, connect instruments to the R/R+L terminal.

■ LINE OUT (output level 2 V 600Ω)

By plugging into a Technics Tone Cabinet or a high-power amplifier, the sound can be reproduced at high volume. (Use the R/R+L terminal when outputting monaural sound.)

■ PHONES

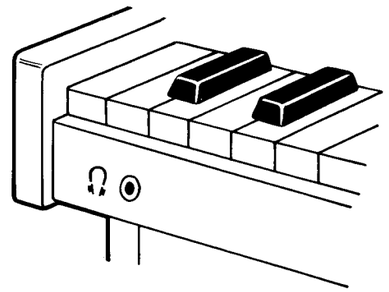
For silent practice headphones may be used.
When plugged in, the speaker system is automatically switched off, and sound is heard only through the headphones.

■ MIDI (Musical Instrument Digital Interface)

MIDI is standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the Technics Digital Piano instruments provided with MIDI terminals.

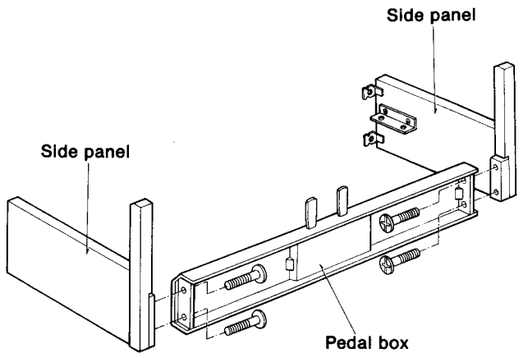
IN: The terminal that receivers data from external equipment.
OUT: The terminal that transmits data from the piano to external equipment.
THRU: The terminal that transfers data from the **IN** terminal directly to other equipment.

- Use a 5-pin DIN cord (less than 15 m long) for these connections.



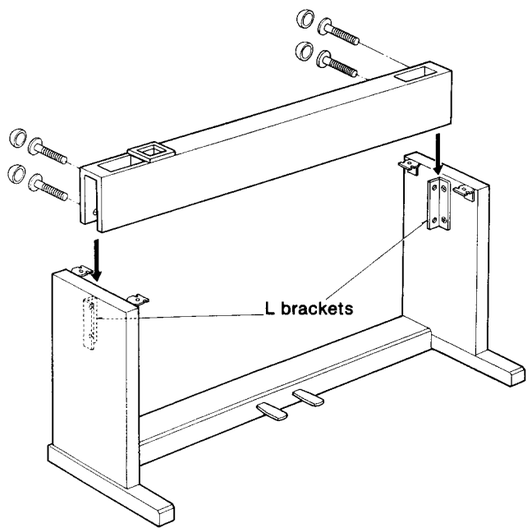
HOW TO ASSEMBLE THE PIANO

1 Attach the side panels to the pedal box using the for black bolts.



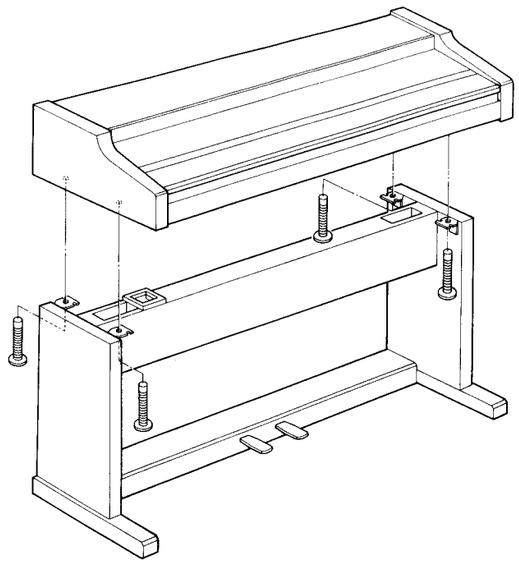
[Fig. 1]

2 Place the stand upright, and fit the crossboard onto the L brackets from above.
Secure it with the four black bolts, and cover the boltheads with the caps.



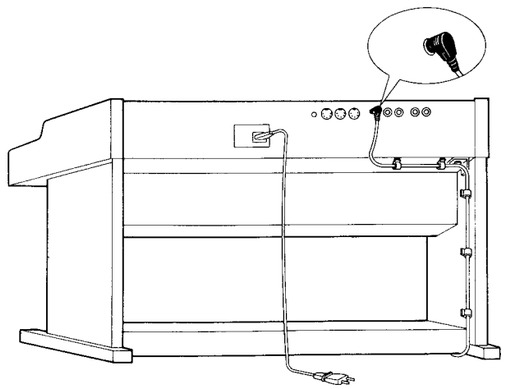
[Fig. 2]

3 Set the piano on the stand, and secure it to the stand with the four brown bolts.



[Fig. 3]

4 Attach the cord from the pedal box.

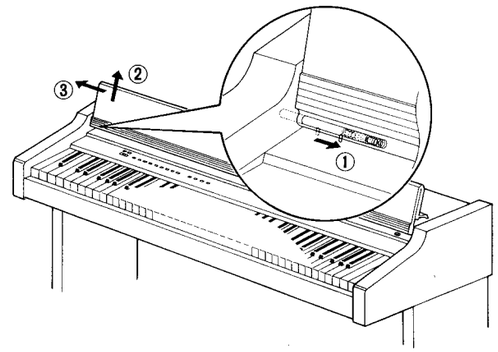


[Fig. 4]

DISASSEMBLY PROCEDURE

1 **How to remove the keyboard cover**

① Left shaft slide to inside with tool as shown Fig. 5-①.
② Lift upward left side of keyboard cover as shown as Fig. 5-②.
③ Remove the keyboard cover slide it leftword as shown Fig. 5-③.

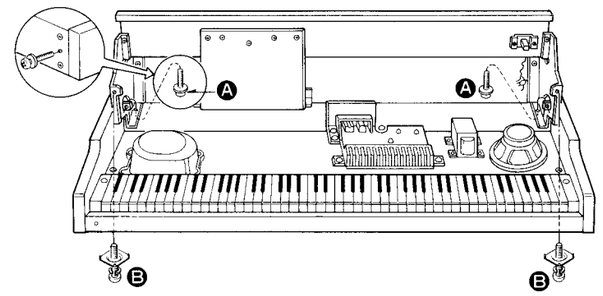


[Fig. 5]

2 **How to remove the top cover**

- Remove the keyboard cover according to procedure 1.

① Remove the 2 screws Ⓐ and 2 screws Ⓑ which fasten the top cover located under the shelf board.
② The top cover can be opend by lifting.

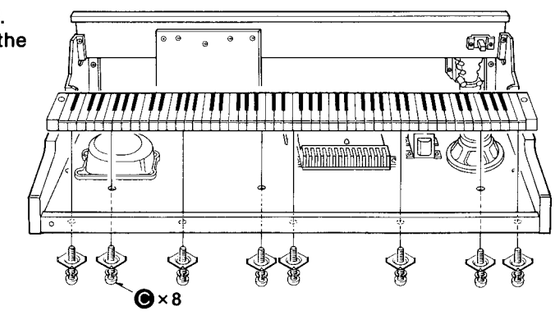


[Fig. 6]

3 **How to remove the keyboard**

- Open the top cover according to procedure 2.

① Remove the 8 screws Ⓒ which fasten the keyboard.



[Fig. 7]

4 **How to rem**

- Remove the
① Lift up the
② The key p
Key can b
③ Lift up the

Note:
- In the case
right and l
black key c

Reassembl

① Insert the
the tang p
② While hol
place the
side the re
③ Slowly pu
chassis.

5 **How to rem**

MAIN Main
- Remove the
Main P.C.B

AS Amp
- Remove the
unit.
- Release the
the Amp &

HP Head
- Remove the
- Remove th
P.C.B.

DISASSEMBLY PROCEDURE

1 How to remove the keyboard cover

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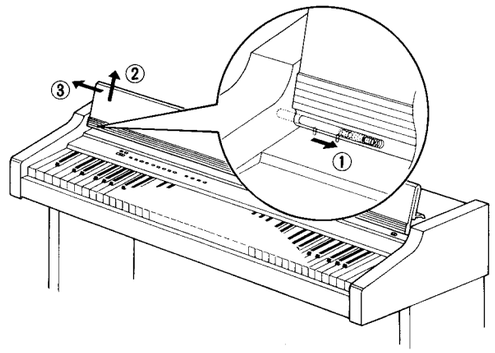

[Fig. 5]

2 How to remove the top cover

- Remove the keyboard cover according to procedure 1.

① Remove the 2 screws Ⓐ and 2 screws Ⓑ which fasten the top cover located under the shelf board.
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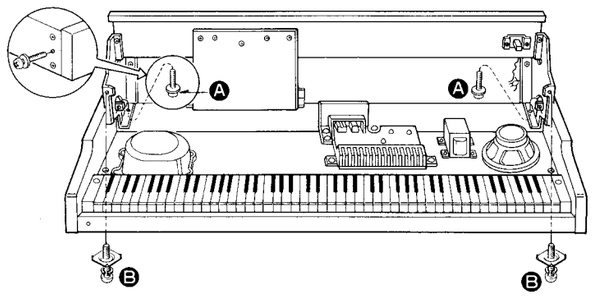
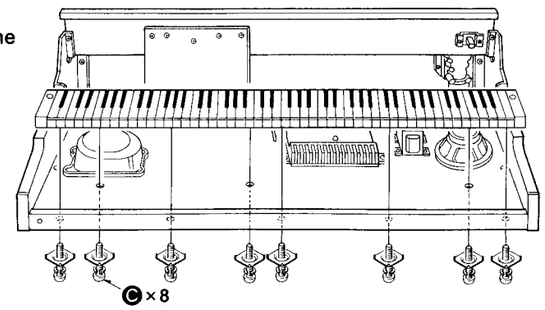


[Fig. 6]

3 How to remove the keyboard

- Open the top cover according to procedure 2.

① Remove the 8 screws Ⓒ which fasten the keyboard.



[Fig. 7]

4 How to remove the keys

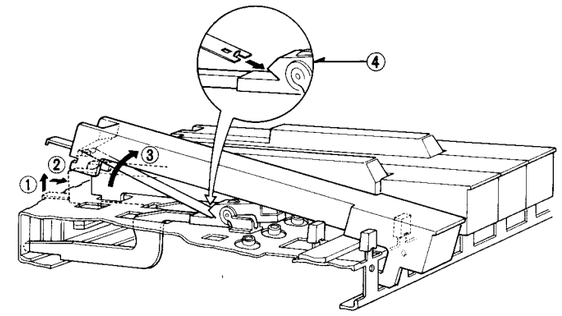
- Remove the keyboard according to procedure 3.

① Lift up the claw as shown Fig. 8-①.
② The key push to forward as shown Fig. 8-②. Key can be removed from chassis.
③ Lift up the key and take it out from chassis.

Note:
- In the case of disassembly black key remove the right and left white key at first and after that black key can be removed.

Reassembly method

① Insert the spring in to the hammer notch with the tang pointings-up as shown in Fig. 8-④.
② While holding the spring against the hammer, place the rear edge of the spring in the notch inside the rear edge of the key.
③ Slowly push the key down into the slots in the chassis.



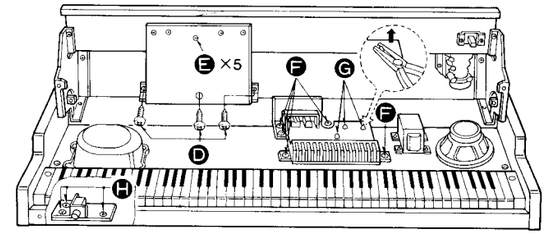
[Fig. 8]

5 How to remove the printed circuit boards

MAIN Main P.C.B. (Fig. 10)
- Remove the 3 screws Ⓓ and 5 screws Ⓔ on the Main P.C.B.

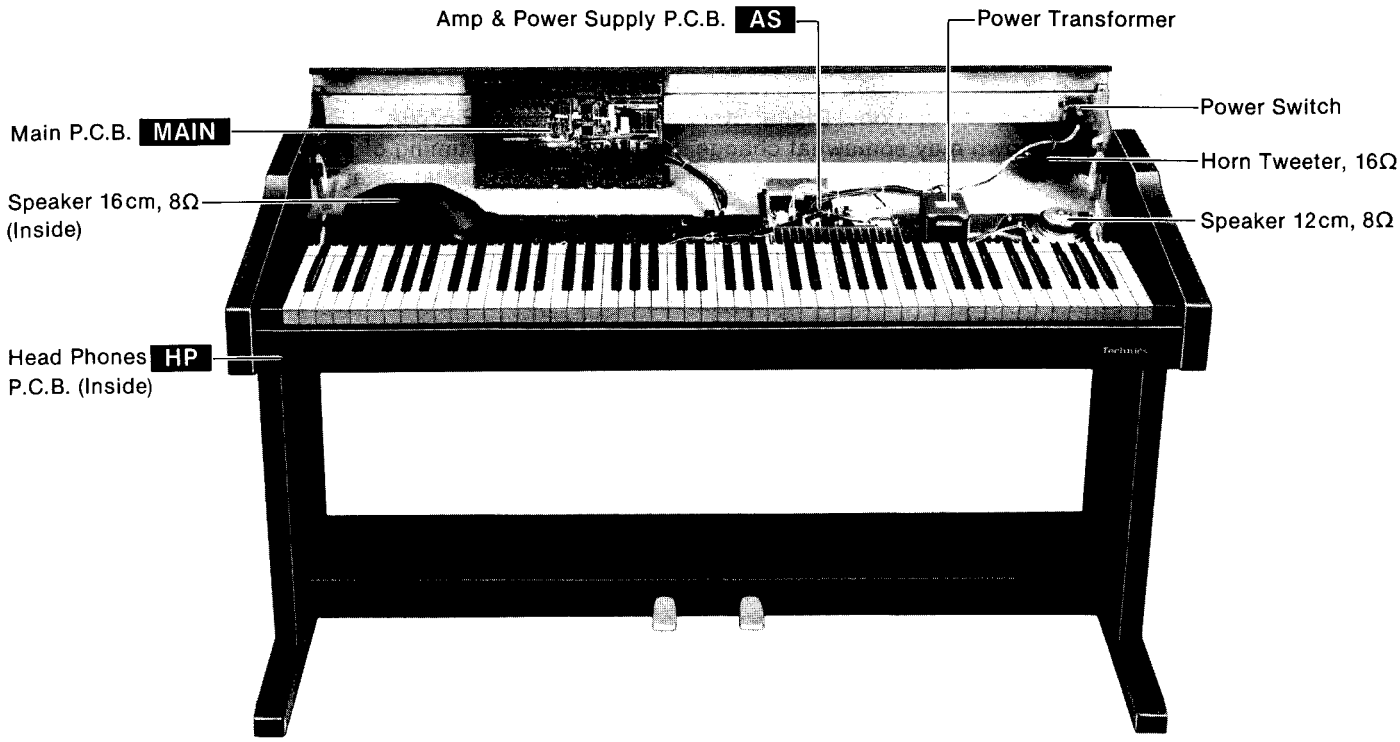
AS Amp & Power Supply P.C.B.
- Remove the 5 screws Ⓕ which fasten the amp unit.
- Release the 3 claws Ⓖ of P.C.B. holder to remove the Amp & power supply P.C.B.

HP Headphones P.C.B.
- Remove the keyboard according to procedure3.
- Remove the 3 screws Ⓗ on the headphones P.C.B.



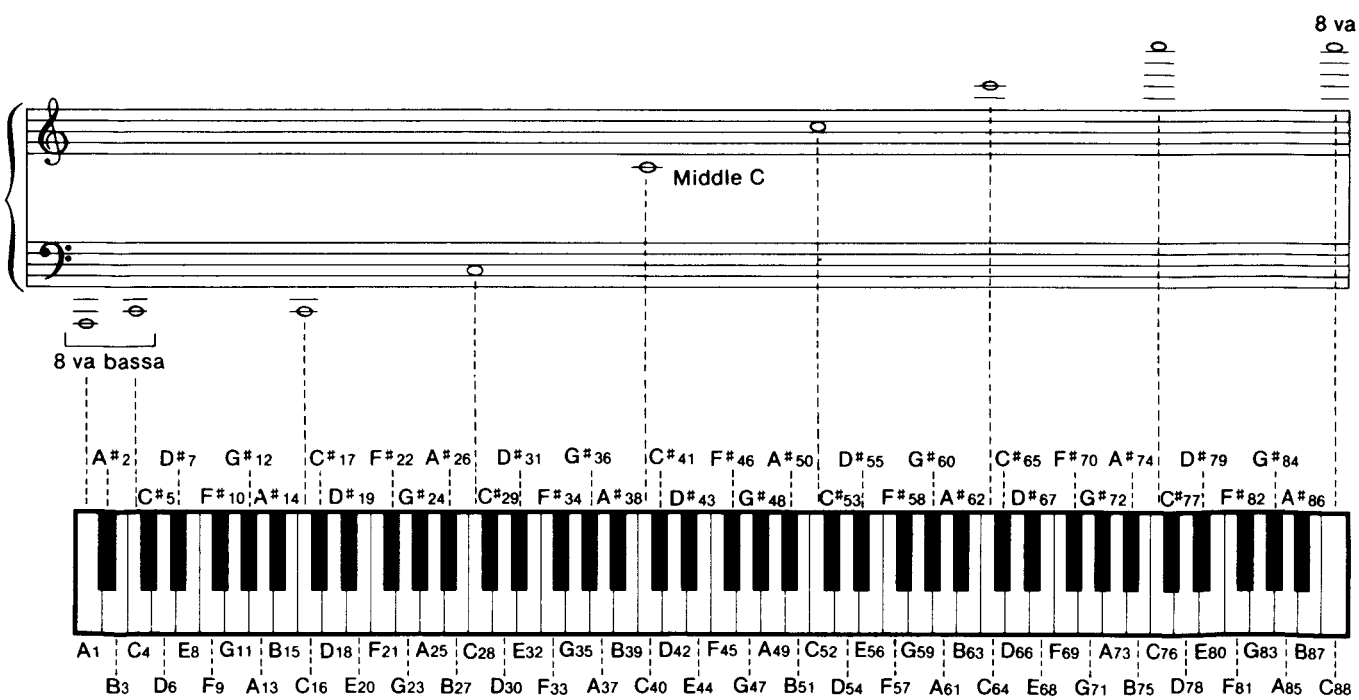
[Fig. 9]

PARTS LOCATION



[Photo-1]

KEYBOARD RANGES



PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. Please set the INITIAL mode before measurement.
   • INITIAL mode: While holding down both MODE SET buttons (CHORUS and MIDI PROGRAM CHANGE), press the INITIAL key.
2. After INITIAL mode, set the measurement conditions as each check points.
3. The waveform was measured by "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may somewhat change due to variation of timing of measure.
4. The voltage shown in the photo is 1/10 of the actual value. However, the actual voltage is 10 times of as shown in this photo.
5. The tone signal output varies with the level of key pressing force.
   In this measurement, the waveform obtained with maximum key pressing force is shown.
   However, the output level and waveform may very, depending on the timing and measuring instrument and other conditions in the measurement.

■ Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors, which are used in the circuits for this Piano, are as shown in TABLE-1 and TABLE-2.

1. RESISTORS
   • Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   • All resistors are 1/4WATT, ±5% TOLERANCE unless otherwise designated in the schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type)
Ⓕ	Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type)	[F]	Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type)	[F]	Fuse Type Fixed Carbon Film Resistors "FLAME-PROOF" (ERD2FC—type)
	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   • Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10% Tolerance)
   • Polarized capacitors without symbolic mark are Aluminum Electrolytic Capacitors. (ECEA—type, ±20% Tolerance)

(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarised Electrolytic Capacitors	ECEA—N—type
Ⓨ	Non-Polarised Electrolytic (for Network System)	ECEA—Y—type
Ⓚ	Aluminum Electrolytic Capacitors (Miniature type)	ECEA—K—type ECEA—X—type
(MS)	Aluminum Electrolytic Capacitors (Low leakage current type)	ECEA—M—type
Ⓩ	Aluminum Electrolytic Capacitors (Low impeadance type)	ECEA—Z—type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV—type
(TF)	Polyester Film Capacitors	ECQB—type
○	Temprature Compensating Ceramic Capacitors	ECC—type
○	High-Dielectric Constant Ceramic Capacitors	ECK—type
	Metalized Polyester Film Capacitors for Across the Line	ECQ—EW—type
	Aluminum Electrolytic Capacitors for smooting Circuit	ECES—type

■ Symptoms which appear to be signs of trouble

The following changes in performance may occur in the Technics digital piano but do not indicate trouble.

Phenomenon	Remedy
No sound	• No sound is made when main volume is at minimum. Properly adjust the sound volume. • No sound is produced if a key is pressed while holding down the **PROGRAM CHANGE** button.
Only 16 tones are made when 17 more keys are pressed.	16 tones on the PX30 can be produced at one time.
The sustain effect is improper.	The tones of the far right keys are automatically sustained just like in an acoustic piano.

MEASUREMENTS AND ADJUSTMENTS

■ Measuring Equipment

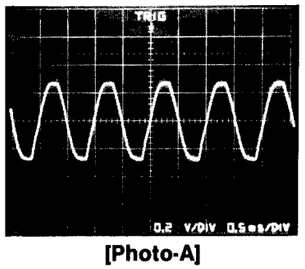
- Oscilloscope 20MHz, 10 : 1 probe
- Oscillator, 1kHz sine wave, 0~10Vp-p, 600Ω
- Capacitor, 50V 1μF (ECEA1HN010S)

ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
BBD bias (CHORUS)	any position	Oscilloscope and oscillator	MAIN P.C.B.	VR1	IC46-①	Photo-A

1. Connect the oscilloscope to IC46-① pin of MAIN circuit board.
2. Input 1kHz sine wave to IC45-③ pin by oscillator through capacitor of less than 50V 1μF. Then, adjust the output level of oscillator until the sinewave on the oscilloscope is clipped.
3. Adjust VR1 so that the output waveforms on the oscilloscope are evenly clipped at top and bottom.

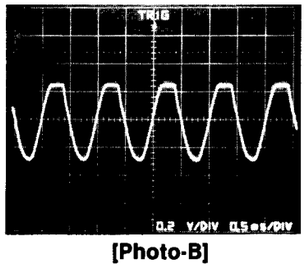
BBD bias adjustment

○: Good



[Photo-A]

×: Fault



[Photo-B]

[digital piano]
[SX-PX20/SX-PX30]

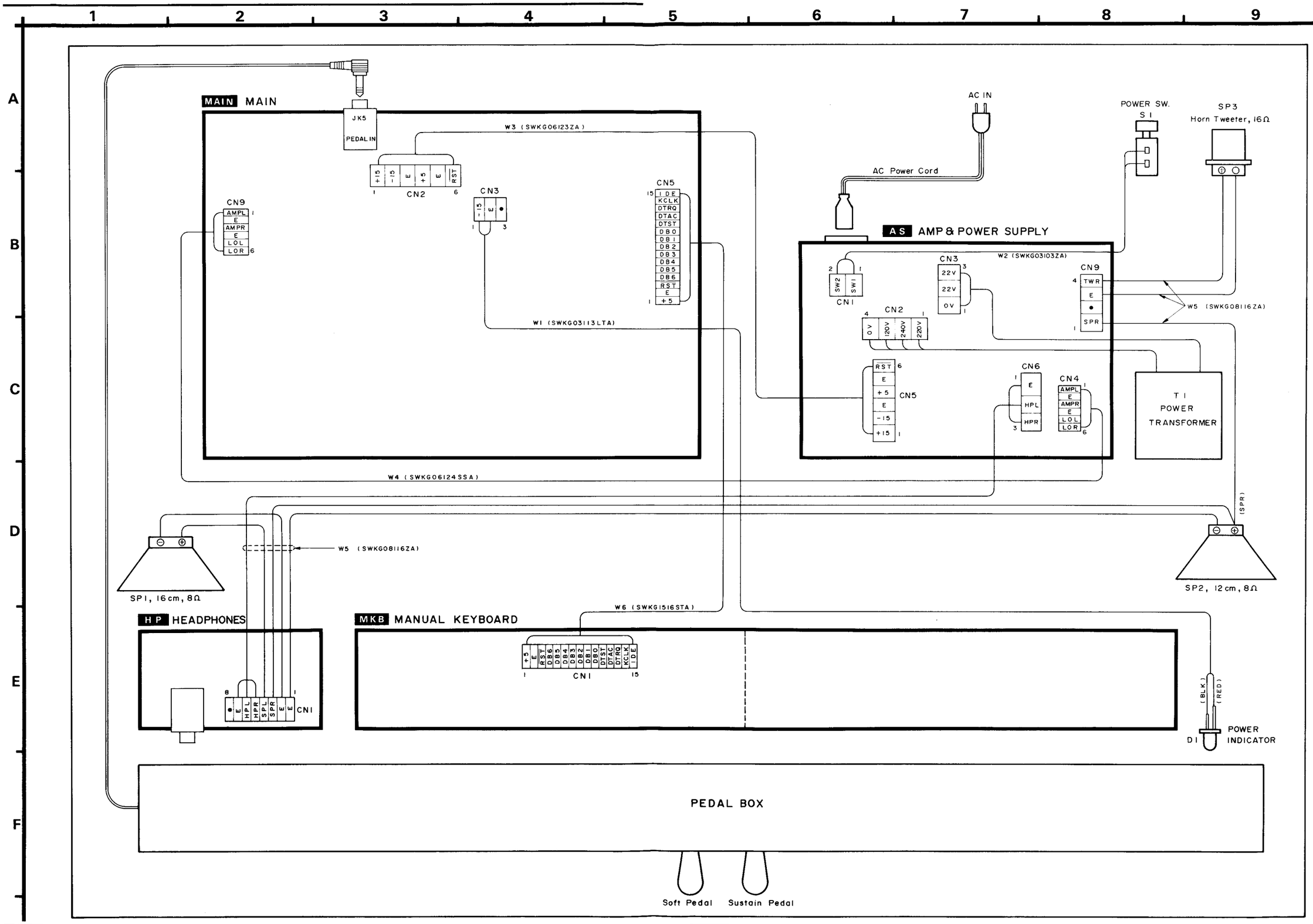
MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic	Default	1 (PX20), 1~16 (PX30)	1 (PX20), 1~16 (PX30)	(PX30: memorized)
Channel	Changed	1 ~ 16	1 ~ 16	
Mode	Default	3	1 (PX20); 1, 3 (PX30)	(PX30: memorized)
	Messages	×	×	
	Altered	———	———	
Note		21 ~ 108	**21 ~ 126	
Number	True voice	———	21 ~ 119	
Velocity	Note ON	○	○	
	Note OFF	× (9nH: V=0)	×	
After	Key's	×	×	
Touch	Ch's	×	×	
Pitch Bender		×	×	
	64	*○×	*○×	sustain pedal
	66	*○×	*○×	sostenuto pedal
Control	67	*○×	*○×	soft pedal
Change	93	*○×	*○×	chorus
Prog		*○ (0 ~ 127) ×	*○ (0 ~ 8) ×	
Change	True #		0 ~ 8	
System Exclusive		×	×	
System	Song Pos	×	×	
	Song Sel	× (PX20), ○ (PX30)	× (PX20), ○ (PX30)	
Common	Tune	×	×	
System	Clock	× (PX20), ○ (PX30)	× (PX20), ○ (PX30)	
Real Time	Commands	× (PX20), *○× (PX30)	× (PX20), *○× (PX30)	start/stop
Aux	Local ON/OFF	×	×	
	All Notes OFF	○	○	
Messages	Active Sense	○	○	
	Reset	×	×	
Notes		*○× ..... Whether or not the data for each of these items is transmitted or received can be set. ** Changes depending on the position of the transpose.		

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO ○ : Yes
Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO × : NO

- This product adheres to MIDI specifications as published by the Japan MIDI Association.

WIRING CONECTION DIAGRAM



BLOCK DIAGRAM

1 2 3 4 5 6 7 8 9 10

A B C D E F

Tone Signals Control Signals

MK B

IC2 1K bit ROM

IC1 Gate Array

Key Switches

IDE, KCLK RST DB0

CN1

MAIN MAIN CIRCUIT

CN5

IDE, KCLK RST DB0~DB6

Data Bus

IC4 : Microcomputer

PB0 (GTRST)

AVCC ANO AVSS X2 X1

TUNE

PB6 DTRQ PB7 DTST PC4 IDE

IDE, KCLK DTRQ, DTST, DTAC

IC5 : Gate Array

X1 X2

IOS5 DTAC IOS9 KCLK

ABO ~ AB3 IOS4

IC53 Decoder

SCK ALE WR RD

CKO ALE WR RD

DBO ~ DB7

IOS1 SALE IOS7 SWRI IOS8 SRDI

PDO ~ PD7 DO ~ D7

CS1 AL0 ~ AL7 A0 ~ A7

PF4 ~ PF7

PF0 ~ PF6 PF7 Address bus

A8 ~ A14

IC11 ROM (256K bit) IC13 RAM (16K bit)

WR RD CE CS

Data Bus (D0~D7)

S1~S15 Switches

IC7 ~ IC10 Latch

D40~63 D51 LED'S

Q2 LED Drive

Data Bus (DB0~DB7)

IC14 Tone Generator LSI.

RIN OSC2 OSC1 SRDI SWRI SALE

X3

IC19 Tone Generator LSI.

SRDI SWRI SALE

IC15 IC16-1 D/A Converter

WDL0 ~ WDL11

WDU0 ~ WDU2

IC17, Z4, IC16-2 Level Shifter

IC18 Wave ROM

Address (A0 ~ A17)

Data (D0 ~ D15)

IC21 IC22-1 D/A Converter

IC23, Z5 IC22-2 Level Shifter

RDP0 ~ 7, WRP0 ~ 7

IC24~IC31 Analog Buffer Memory

IC32 ~ IC39 Analog Buffer Memory

JK2 MIDI THRU IC1-4

JK3 MIDI OUT IC1-3 TXD

JK4 MIDI IN IC3 Photo Coupler RXD

JK5 Pedal IN Q1 AN2, PA5, PA7

NMI RST

PA0 MELLOW PA1 BRIGHT PA2 CHO PB4 BUSY

IC20-2 Mixing

IC41-1 Low-Pass Filter

IC41-2 Notch Filter

IC42-2 Brilliance Control

MELLOW BRIGHT

IC42-1 Phase Inverter

IC45 BBD

IC46-2 Low-Pass Filter

IC46-1 Phase Inverter

IC43 LOW-Frequency Oscillator

IC44 Clock Generator

Q7 Q8

IC47-2 Mixing

IC47-1 Mixing

IC50 Dynamic Noise Reduction

CHO

D73, R268, C138 Gate Control

RST +5 +15 -15 E

5 6 7 8 9 10 11 12 13 14

Key Switches

AS AMP & POWER SUPPLY CIRCUIT

SI Power SW

AC IN

TI POWER TRANSFORMER

Q1 ~ Q3 Reset Circuit

D1, D2, D3 ~ 6 Rectifier

Primary Circuit

CN1 CN2 CN3

RST +5 +15 -15 E

IC2, Q4, D10 +5V Switching Regulator

IC3 +15V Regulator

IC4 -15V Regulator

SP1 16cm, 8Ω

SPL

Power Indicator

CN2 CN3

RST +5 +15 -15 E -15

HP HEADPHONES

JK1 Headphones

SPL HPL HPR SPR

CN1 CN6

SP2 12cm, 8Ω

SPR

SP3 Horn Tweeter

TWR

CN9

IC14 Tone Generator LSI.

RIN OSC2 OSC1 X3

SRDI SWRI SALE

WDL0 ~ WDL11

IC15 IC16-1 D/A Converter

IC17, Z4, IC16-2 Level Shifter

WDU0 ~ WDU2

RDP0 ~ 7, WRP0 ~ 7

IC24 ~ IC31 Analog Buffer Memory

Address (A0 ~ A17)

IC18 Wave ROM

IC19 Tone Generator LSI.

Data (D0 ~ D15)

IC32 ~ IC39 Analog Buffer Memory

IC21 IC22-1 D/A Converter

IC23, Z5 IC22-2 Level Shifter

SI5 ~ IC10 Latch Q2 LED Drive LED'S

Data Bus (DB0 ~ DB7)

IC20-2 Mixing

IC41-1 Low-Pass Filter

IC41-2 Notch Filter

IC42-2 Brilliance Control

MELLOW BRIGHT

IC42-1 Phase Inverter

IC43 LOW-Frequency Oscillator

IC44 Clock Generator

IC45 BBD

IC46-2 Low-Pass Filter

IC46-1 Phase Inverter

Q7 Q8

IC47-2 Mixing

IC47-1 Mixing

IC50 Dynamic Noise Reduction

MAIN VOLUME Q11 Q12

IC51-2 Lch Amp

IC51-1 Rch Amp

AMPL AMPR

CN9 CN4

IC1-2 (Lch) Power Amplifier

IC1-1 (Rch) Power Amplifier

LOL LOR

JK6 R/R+L

JK7 L

LINE OUT

IC52-2 R ch AUX AMP

IC52-1 L ch AUX AMP

JK8 R/R+L

JK9 L

AUX

D73, R268, C138 Gate Control

CHO

MAIN CIRCUIT BOARD

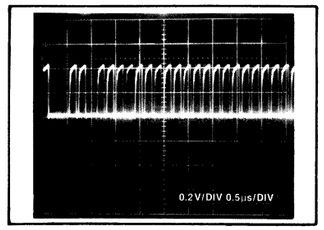
1 2 3 4 5 6 7 8 9 10

A B C D E F

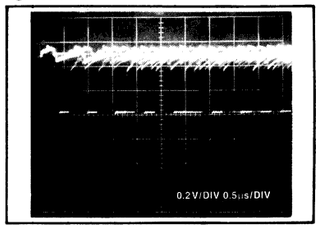
❸ TUNE

- Tune
  - b 0V
  - ⟆
  - center ..... +2.5V
  - ⟆
  - # ..... +5V

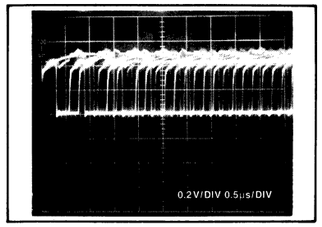
❼ ALE



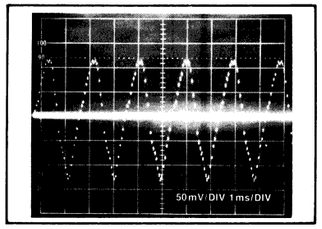
❽ $\overline{WR}$



❾ $\overline{RD}$

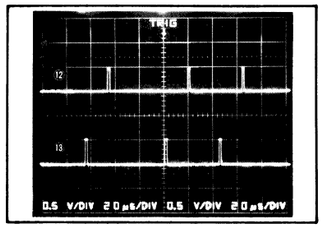


❿, ⓫

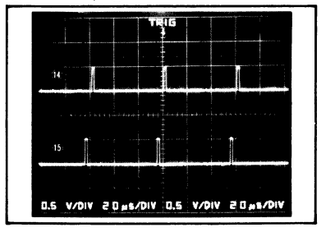


- Tone ..... Piano I
- Keyboard ..... C_{52}

⓬ WRP7, ⓭ WRP0



⓮ RDP7, ⓯ RDP0



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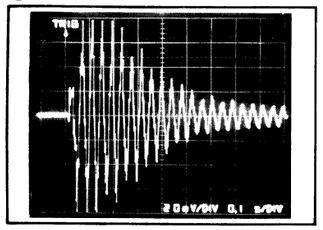
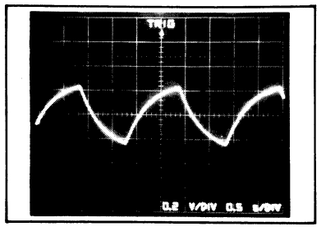
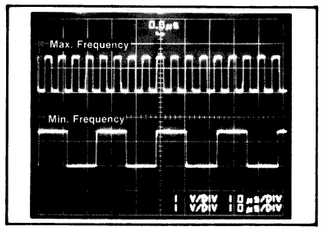


- Tone ..... Piano I
- Keyboard ..... C_{52}

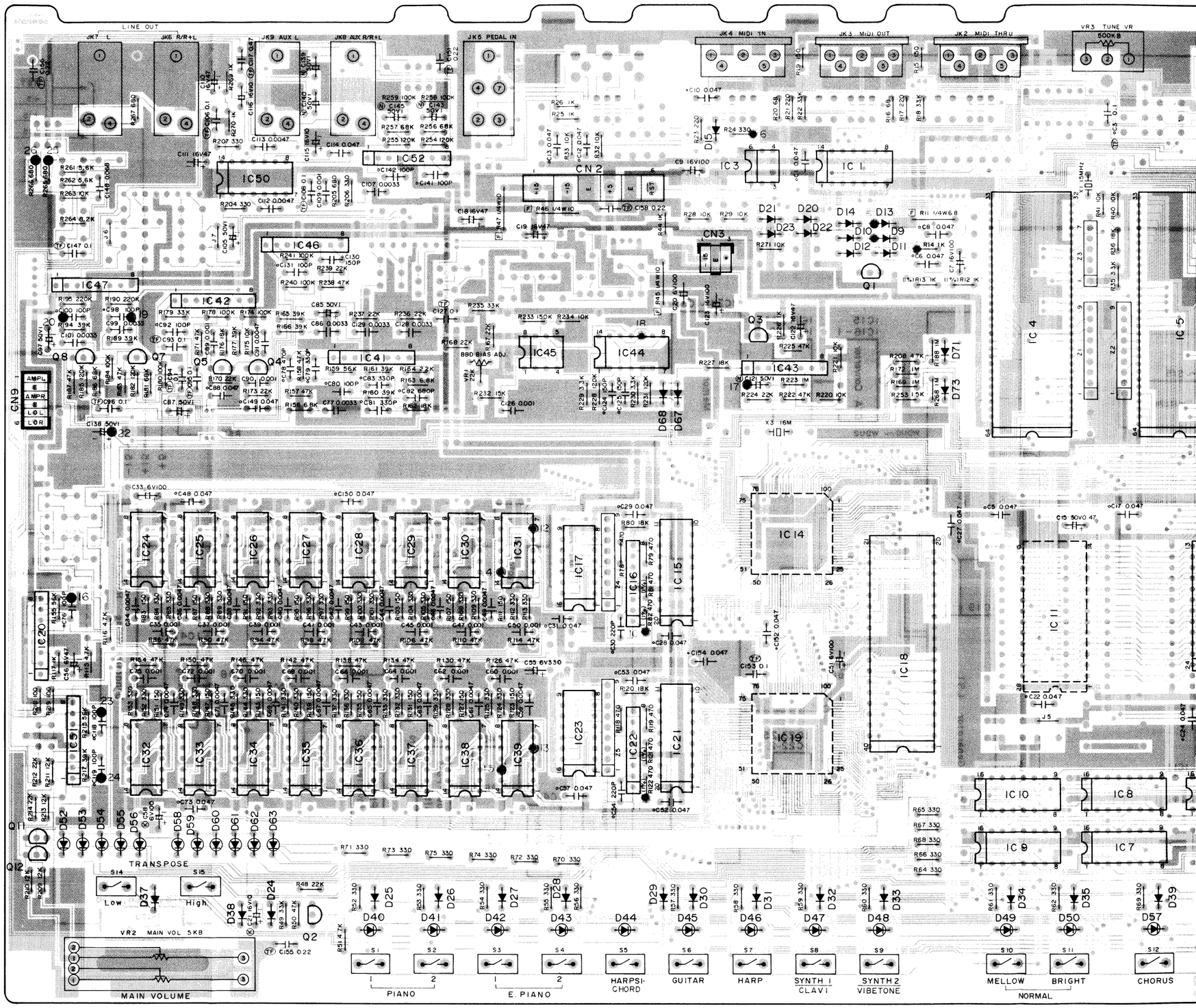
⓱



⓲ PFM

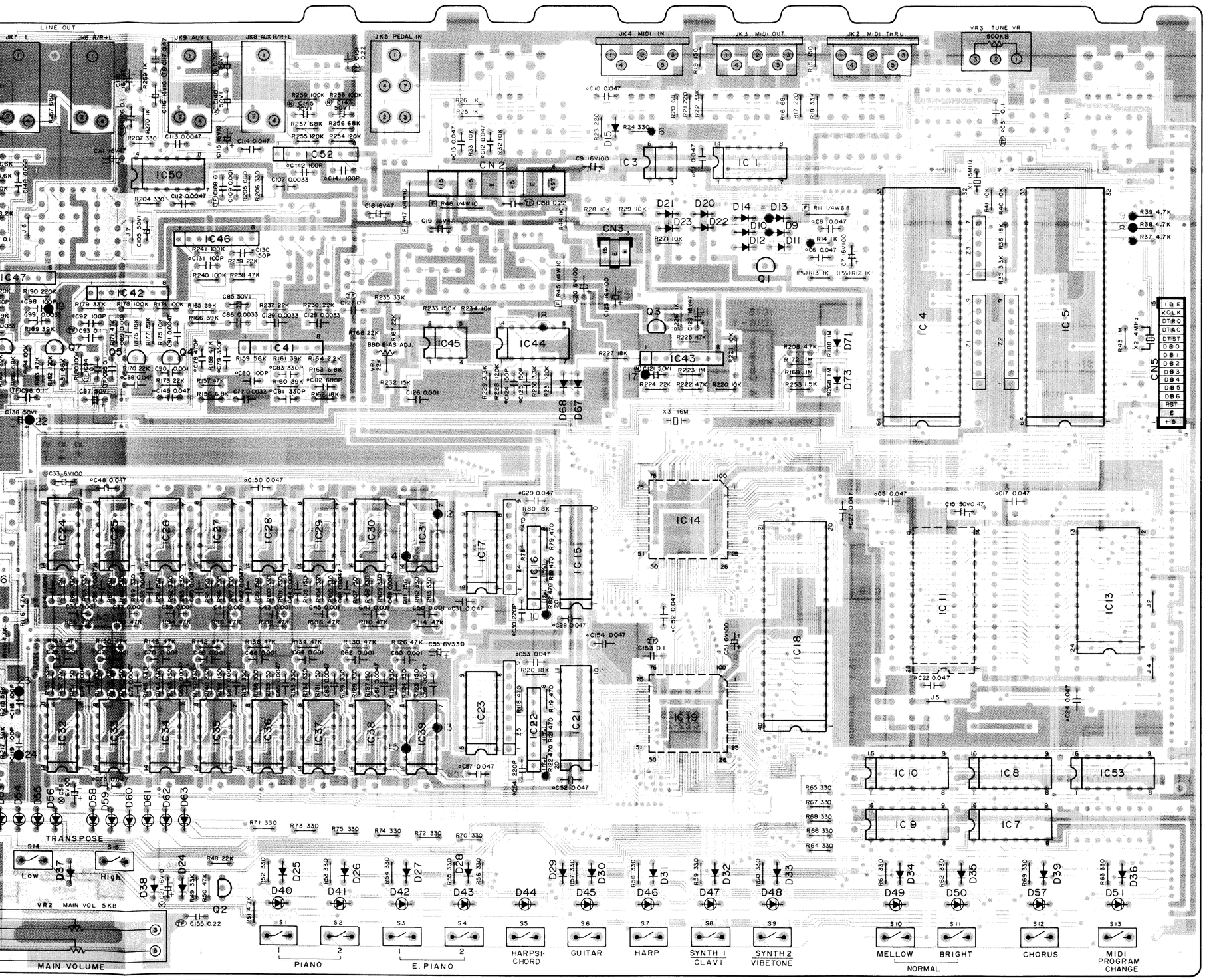


Circuit view on top of P.C.B.



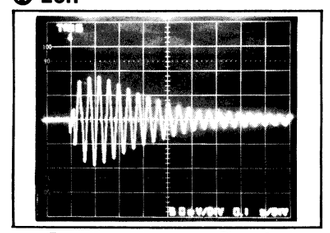
Circuit view on top of P.C.B.

SXPG141421



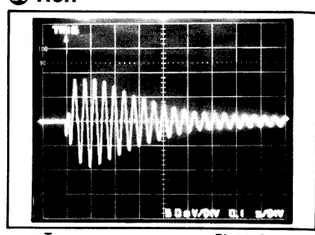
II-7 II-8

⑲ Lch



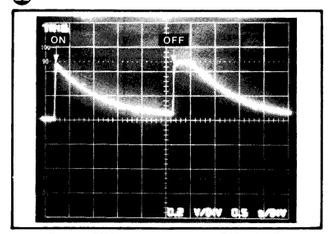
- Tone.....Piano I
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

⑳ Rch



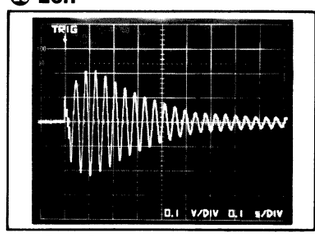
- Tone.....Piano I
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉒



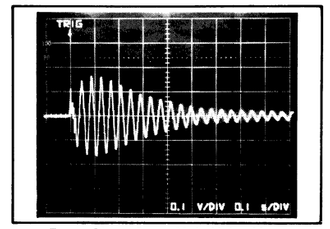
- Power SW.....ON→OFF

㉓ Lch



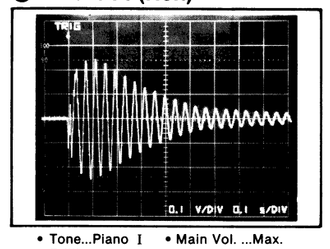
- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉔ Rch



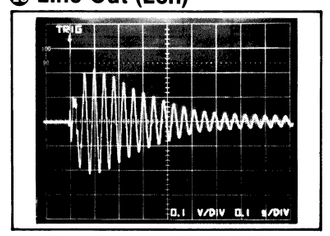
- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉕ Line Out (Rch)



- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉖ Line Out (Lch)



- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

NOTES:

- IC'S

IC1:	SVIGM74LS07
IC3:	SVIGTLP513
IC4:	SVIG7810HCW
IC5:	SVIGM603A114
IC7~10:	SVIGM74LS174
IC11:	SVIG2PX30AX1
IC13:	SVIGD446C25
IC14, 19:	MN6635
IC15, 21:	SVIGBA9221
IC16, 22:	SVIGM5238L
IC17, 23:	SVIGT74H4051
IC18:	SVIGU3C04165
IC20, 41~43, 46, 47, 51, 52:	SVIGM5218L
IC24~39:	SVIGM74H4066
IC44:	SVIGMSM4011
IC45:	MN3009
IC50:	SVIGLM1894N
IC53:	SVIGM74LS138

- TRANSISTORS

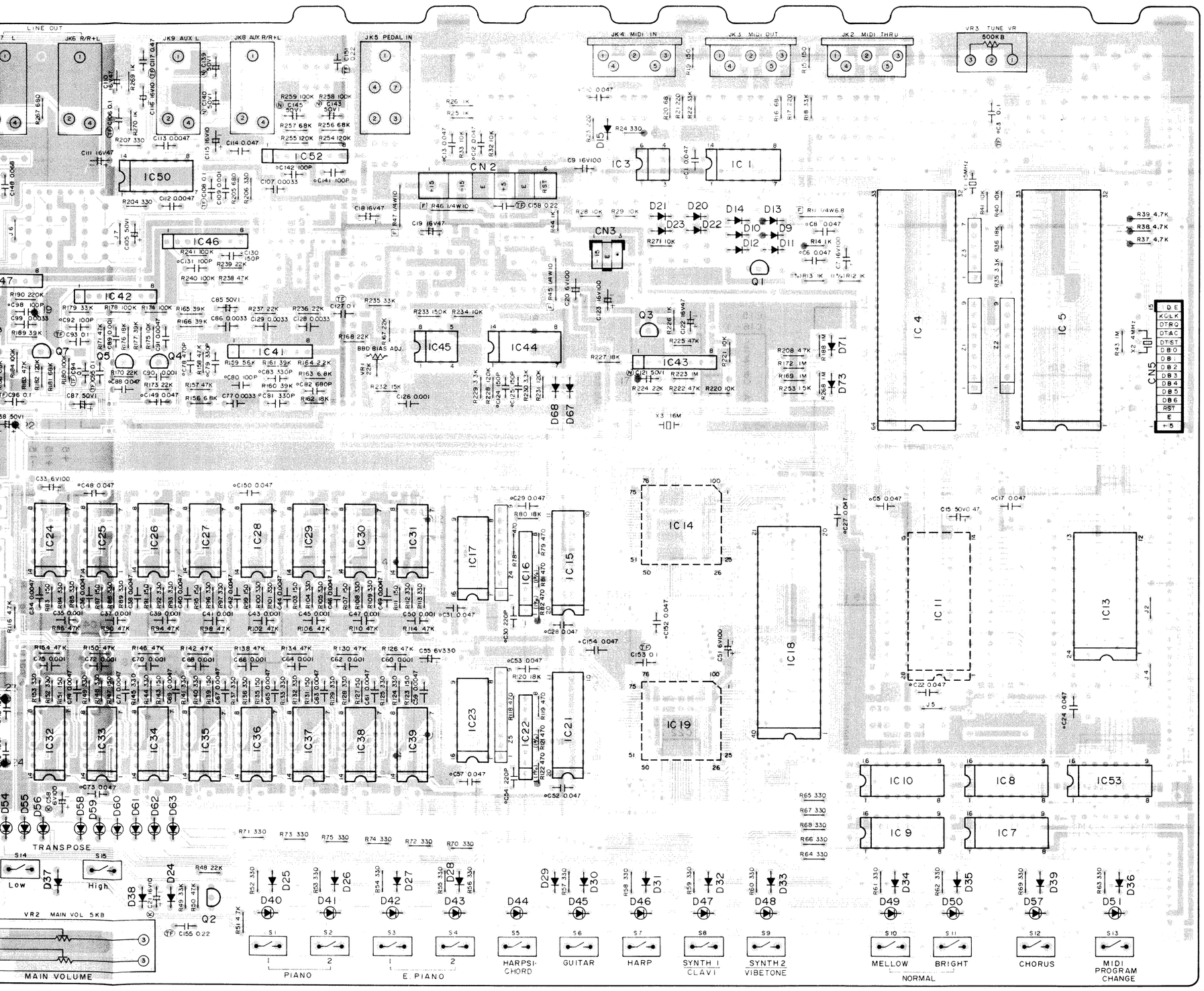
Q1:	2SA1015-GR
Q2:	2SA830SB
Q3:	2SC2320LFG
Q4, 5, 7, 8, 11, 12:	2SJ105GR

- DIODES

D9~15, 20~39, 67, 68, 71, 73:	MA165TA5
D40~63:	LN282R

cuit view on top of P.C.B.

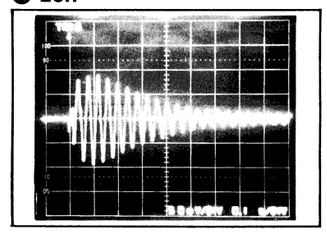
SXPG141421



II - 7

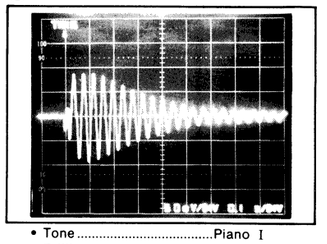
II - 8

⑲ Lch



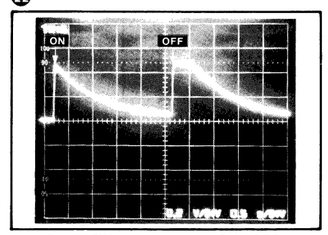
- Tone.....Piano I
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

⑳ Rch



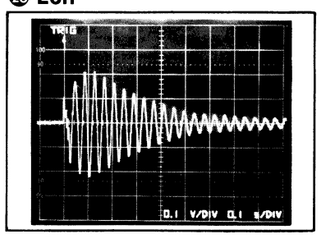
- Tone.....Piano I
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉒



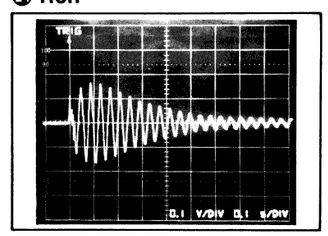
- Power SW.....ON→OFF

㉓ Lch



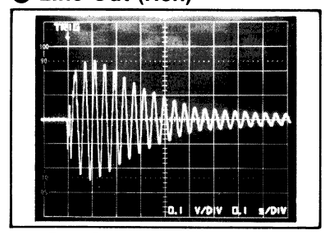
- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉔ Rch



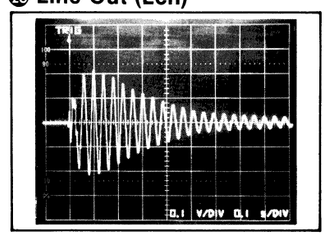
- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉕ Line Out (Rch)



- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

㉖ Line Out (Lch)



- Tone...Piano I • Main Vol. ...Max.
- Brilliance.....Mellow
- Chorus...OFF • Key...C_{52}

NOTES:

- IC'S

IC1:	SVIGM74LS07
IC3:	SVIGTLP513
IC4:	SVIG7810HCW
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IC7～10:	SVIGM74LS174
IC11:	SVIG2PX30AX1
IC13:	SVIGD446C25
IC14, 19:	MN6635
IC15, 21:	SVIGBA9221
IC16, 22:	SVIGM5238L
IC17, 23:	SVIGT74H4051
IC18:	SVIGU3C04165
IC20, 41～43, 46, 47, 51, 52:	SVIGM5218L
IC24～39:	SVIGM74H4066
IC44:	SVIGMSM4011
IC45:	MN3009
IC50:	SVIGLM1894N
IC53:	SVIGM74LS138

- TRANSISTORS

Q1:	2SA1015-GR
Q2:	2SA830SB
Q3:	2SC2320LFG
Q4, 5, 7, 8, 11, 12:	2SJ105GR

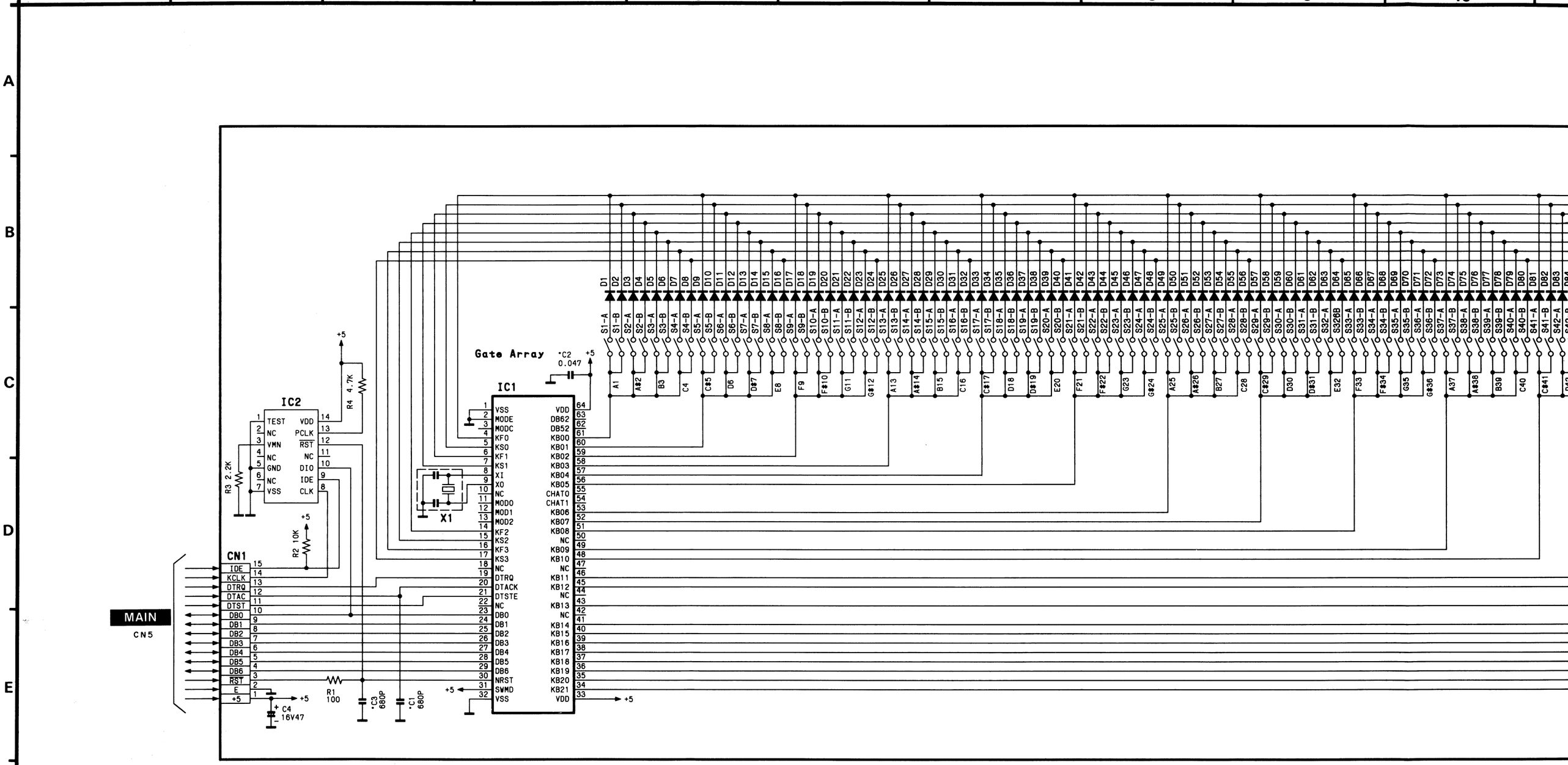
- DIODES

D9～15, 20～39, 67, 68, 71, 73:	MA165TA5
D40～63:	LN282R

MAIN CIRCUIT DIAGRAM

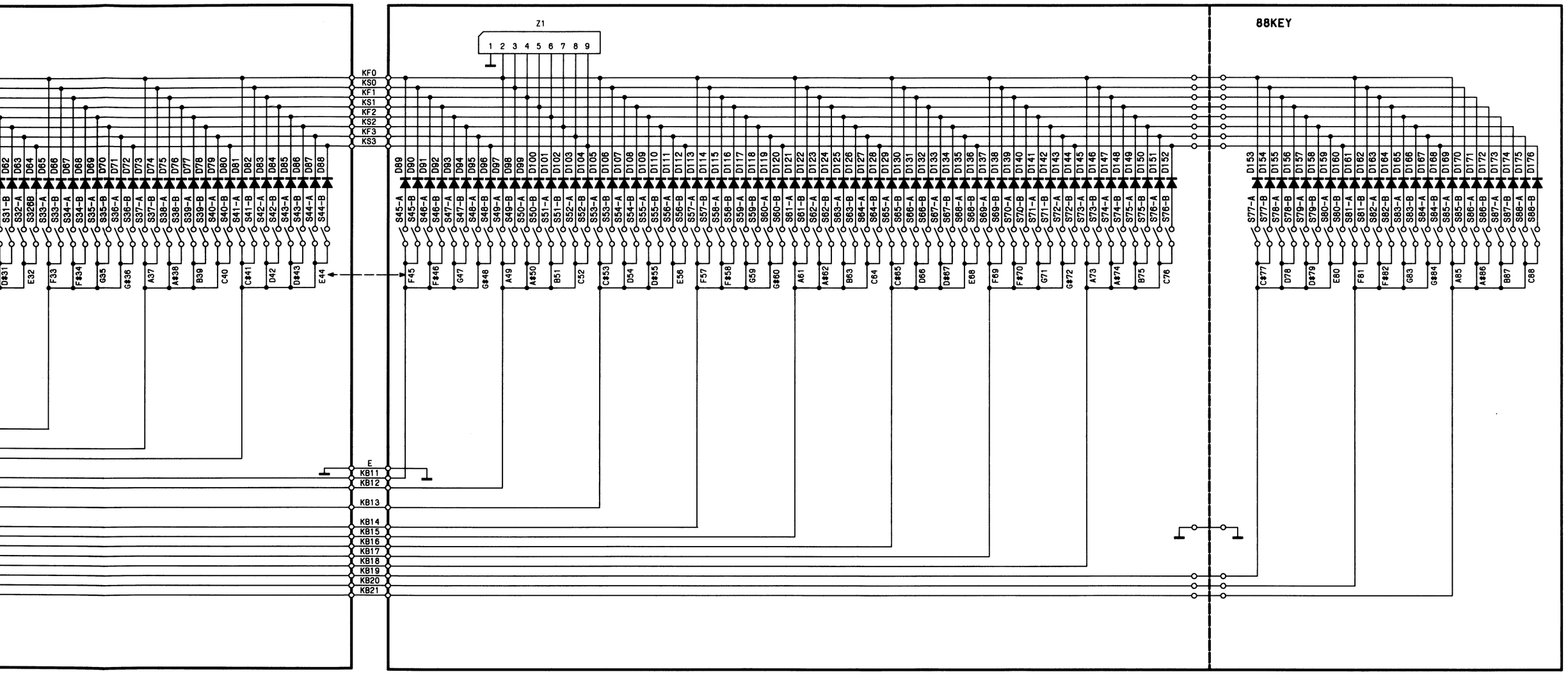
IC14 Tone Generator LSI
IC15 D/A Converter
IC16-1
IC16-2
IC17 Level Shifter
IC18 WAVE ROM
IC19 Tone Generator LSI
IC20-1 Bias Regulator
IC20-2
IC21 D/A Converter
IC22-1
IC22-2
IC23 Level Shifter
Analog Buffer Memory (8ch)
IC24 IC25 IC26 IC27 IC28 IC29 IC30 IC31
IC32 IC33 IC34 IC35 IC36 IC37 IC38 IC39
Mixing
Low-Pass Filter
Notch Filter
IC41-1
IC41-2
IC42-1 Phase Inverter
IC42-2 Brilliance Control
IC43-1 IC43-2 Low-Frequency Oscillator
IC44 Clock Generator
IC45 BBD (256-stages)
IC46-1 IC46-2 Low-Pass Filter Phase Inverter
IC47-1 Rch Amp
IC47-2 Lch Amp
IC50
IC51-1 Mixing
IC51-2 Mixing
IC52-1 AUX Amp
IC52-2
Q3 Q4 Q5 Q7 Q8 Q11 Q12
D67 D68 D71 D73
Noise Reduction
Main Volume
Noise Limiter
Chorus ON/OFF
BBD Bias
Brilliance Control
Level Shifter
Clock Generator
Low-Pass Filter Phase Inverter
Line OUT
AUX IN
CN9 CN4 AS
JK6 JK7 JK8 JK9
(BUSY)

MANUAL KEYBOARD CIRCUIT DIAGRAM



NOTES:

- IC'S
  - IC1: MN50020PGV
  - IC2: not supplied
- DIODES
  - D1~176: MA162A

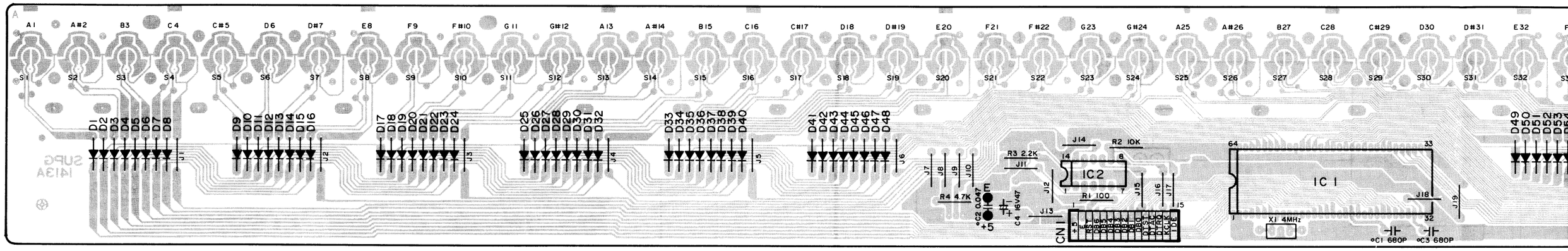

Z1
1 2 3 4 5 6 7 8 9
88KEY
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
E
KB11
KB12
KB13
KB14
KB15
KB16
KB17
KB18
KB19
KB20
KB21

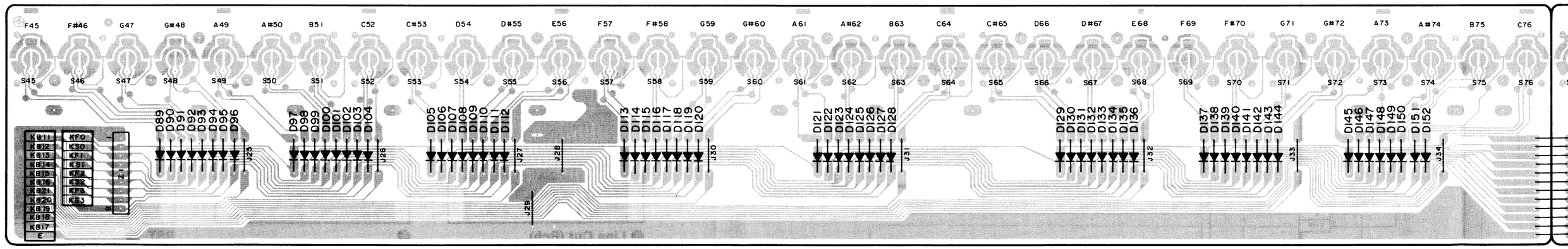
MANUAL KEYBOARD CIRCUIT BOARD

■ The repair of the keyboard PCB and key switches.

The keyboards on the SX-PX30 employ an operating system which is unique to each unit. This system insures touch response accuracy.
To maintain that accuracy, please note the following points when repairing the keyboard:

1. When repairing the Rubber Contact Switches:
   SSPG6003A (6 continuous)
   SSPG7003A (7 continuous)
   A. It is necessary to replace all of these switches if one of them becomes defective. (The replacement parts are selected for accuracy of touch response.)
   B. Cut Jumper 15 on the Manual Keyboard P.C.B. to disconnect the Data ROM. (It is not necessary with the higher tolerance switches.)
2. If the Manual Keyboard P.C.B. needs to be replaced, due to physical damage, it is necessary to replace both keyboard P.C.B's at the same time.
3. The Data ROM (IC2) is matched to Rubber Contact Switches/P.C.B. combination and is not available separately.
   If this part should become defective cut jumper 15 or remove the part. To insure touch response accuracy it may be necessary to replace the Rubber Contact Switches. (See Step 1)
4. If the Manual Keyboard microprocessor (IC1) is defective, it can replaced with a unit from parts. No special considerations are necessary.





NOTES:
- IC'S
  IC1: MN50020PGV
  IC2: not supplied
- DIODES
  D1~176: MA162A

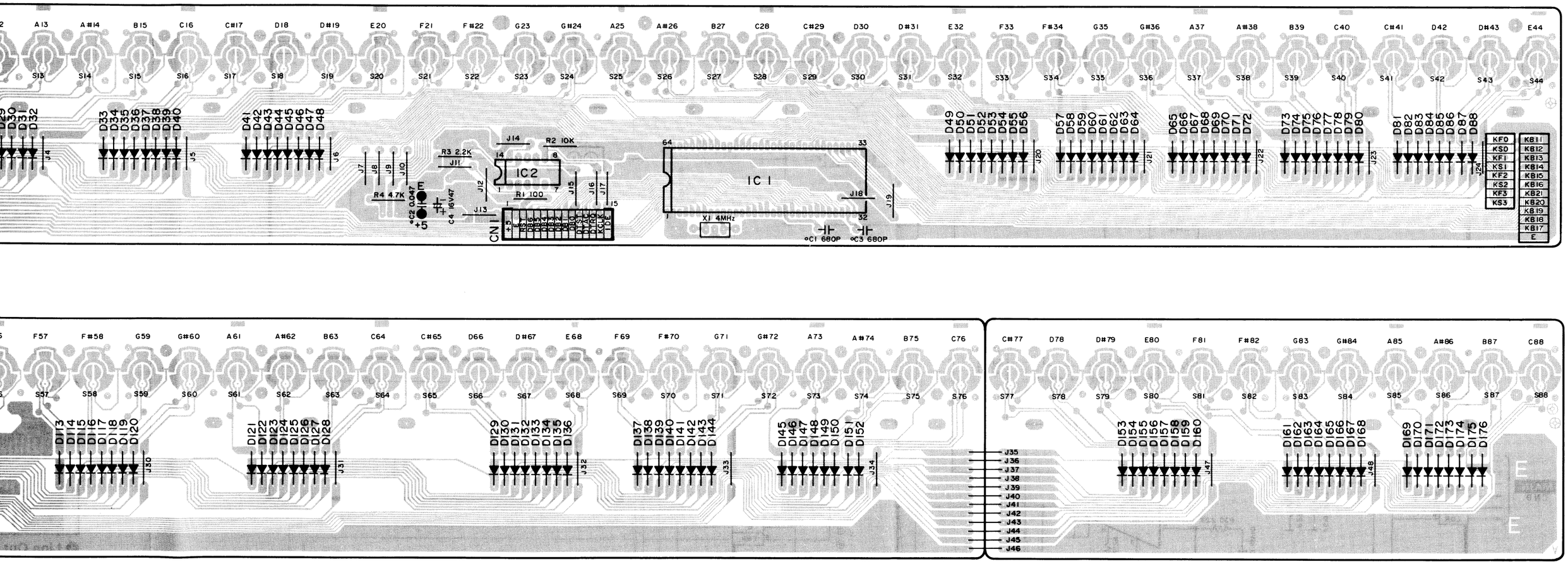
ures touch

re selected

the higher

2. If the Manual Keyboard P.C.B. needs to be replaced, due to physical damage, it is necessary to replace both keyboard P.C.B's at the same time.
3. The Data ROM (IC2) is matched to Rubber Contact Switches/P.C.B. combination and is not available separately. If this part should become defective cut jumper 15 or remove the part. To insure touch response accuracy it may be necessary to replace the Rubber Contact Switches. (See Step 1)
4. If the Manual Keyboard microprocessor (IC1) is defective, it can replaced with a unit from parts. No special considerations are necessary.

SXPG141311



NOTES:

- IC'S
  - IC1: MN50020PGV
  - IC2: not supplied
- DIODES
  - D1~176: MA162A

AMP & POWER SUPPLY, HEADPHONES CIRCUIT DIAGRAM

AS AMP & POWER SUPPLY CIRCUIT

Power SW △SI

Power Transformer △T1

CN1 SW2 SW1 — △JK1 AC1 AC2 — △L1 △L2 — oC1 4700P — △C2 0.1 250V

△SI Vol. Selector

△F2 T1.25A 250V → 1 220V (BRN)
△F3 T1.25A 250V → 2 240V (RED)
△F1 T2.5A 250V → 3 120V (ORG)
4 0V (BLU) — CN2

△PC1 AC Power Cord

* PRODUCTS FOR (M) and (MC) areas.

CN1 SW2 SW1 — △JK1 AC1 AC2 — △L1 △L2 — oC1 4700P — △C2 0.1 250V

△F1 4A 125V → 3 120V (ORG)
4 0V (BLU) — CN2

CN3: (BLU) 2 22V; (BLK) 1 0V; (BLU) 3 22V

△C29 0.1 250V

Rectifier: △D1 R1 10K; △D2 R2 10K; R3 10K

Reset Circuit: R4 1K; R5 1K; R6 22K; R7 22K; R8 47K; C5 16V10; C6 50V1; R9 4.7K; D8; R10 1.5M; C7 50V2.2; R12 1M; R11 1M; Q1; Q2; Q3; (RST)

Rectifier: △D5 △D3 △D6 △D4

+24V 720mVpp

+5V Switching Regulator: △(F) R14 1W1; Q4; L3; R15 100; (L) R16 1W220; D9; 6; C10 6V1000; oC11 0.047; D10; +5V

IC2: C8 50V47; C9 0.001; △(F) R13 1/4 W4.7; △(F) R40 1/4W4.7; R17 3.3K; R18 1K

CN5: 6 RST; 5 E; 4 +5; 3 E; 2 −15; 1 +15 — MAIN CN2

−24V 400mVpp

IC3 + 15V Regulator: C4 35V3300; C27 35V10

IC4 − 15V Regulator: C3 35V3300; C26 35V10

C28 35V220; △(F) R19 1/4W68

1 (N) C13 16V10 R20 4.7K; oC14 100P; R21 2.2K

IC1-2 Power Amplifier: R22 2.2K; (N) C15 16V10; R23 47K; R24 2.2K; C16 25V47; R25 1.5K; R26 1.5K; (F) R27 1/4W4.7 C17 0.1

C22 35V10; R36 1K; R37 1K; R35 1K; R38 270K

CN4: AMPL 1; E 2; AMPR 3; E 4; LOL 5; LOR 6 — MAIN CN9

2 (N) C18 16V10 R28 4.7K; oC19 100P; R29 2.2K

IC1-1 Power Amplifier: R30 2.2K; (N) C20 16V10; R31 47K; R34 2.2K; C21 25V47; R33 1.5K; R32 1.5K; (F) R39 1/4W4.7 C23 0.1

3 4 7

CN6: 1 E; 2 HPL; 3 HPR

CN9: 1 SPR; 2 •; 3 E; 4 TWR

(Y) C24 1.5

HP HEADPHONES CIRCUIT

CN1: • E HPL HPR SPL SPR E E

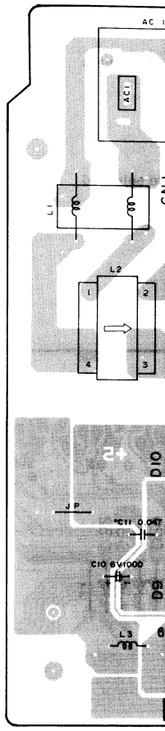
△(F) R1 1/2W 330; △(F) R2 1/2W 220

oC1 680P; oC2 680P; oC3 0.047 — JK1

SP1, 16cm, 8Ω (SPL) (E)

SP2, 12cm, 8Ω (SPR) (E)

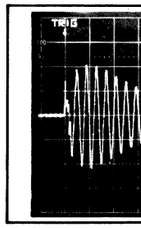
SP3, 16Ω Horn Tweeter (TWR) (E)



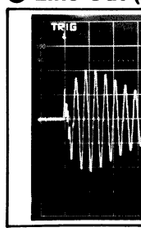
■ Measuring

- Tone .....
- Chorus.....
- Keyboard .....
- Main Volume...
- Brilliance.....

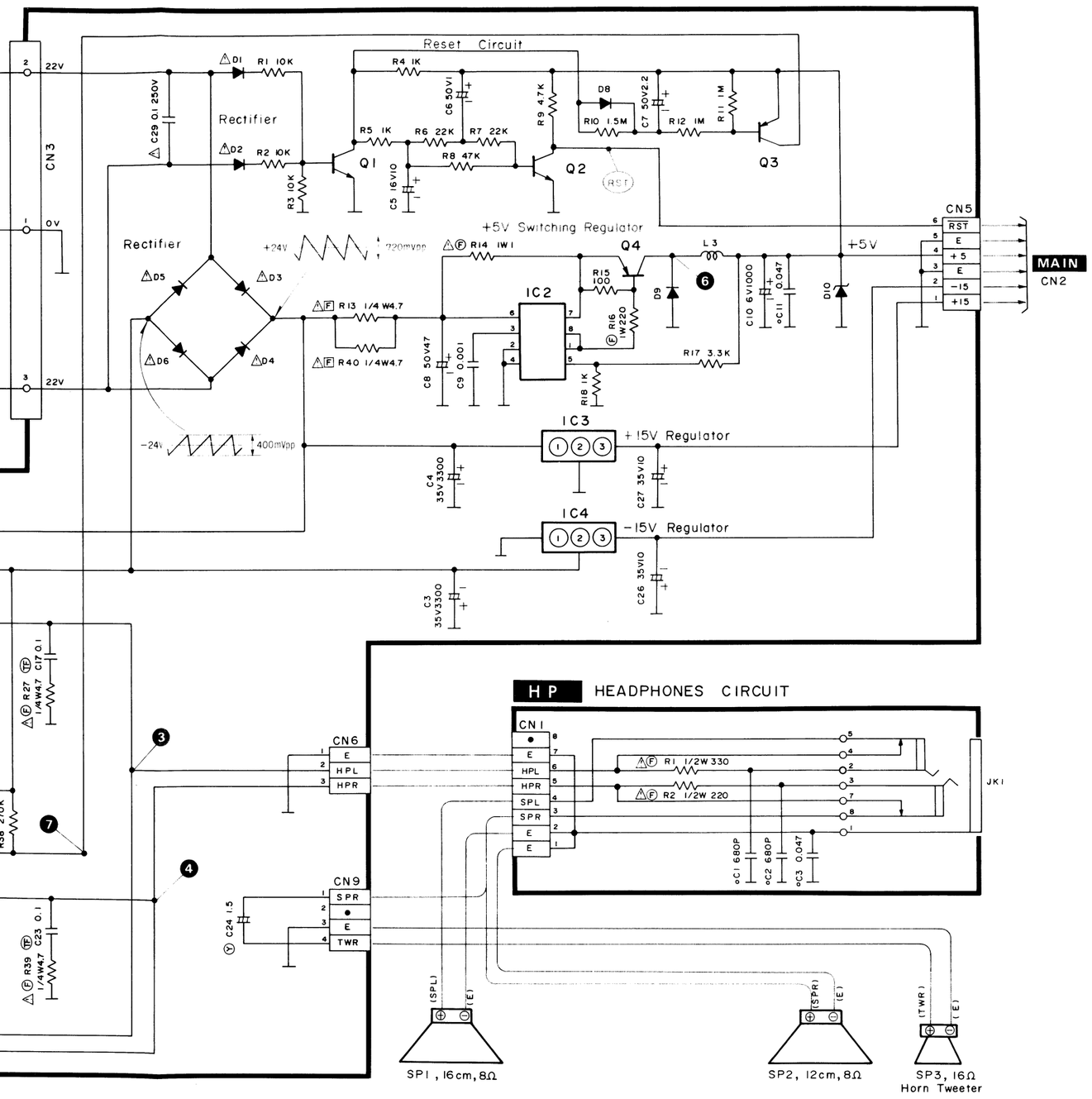
❶ Lch

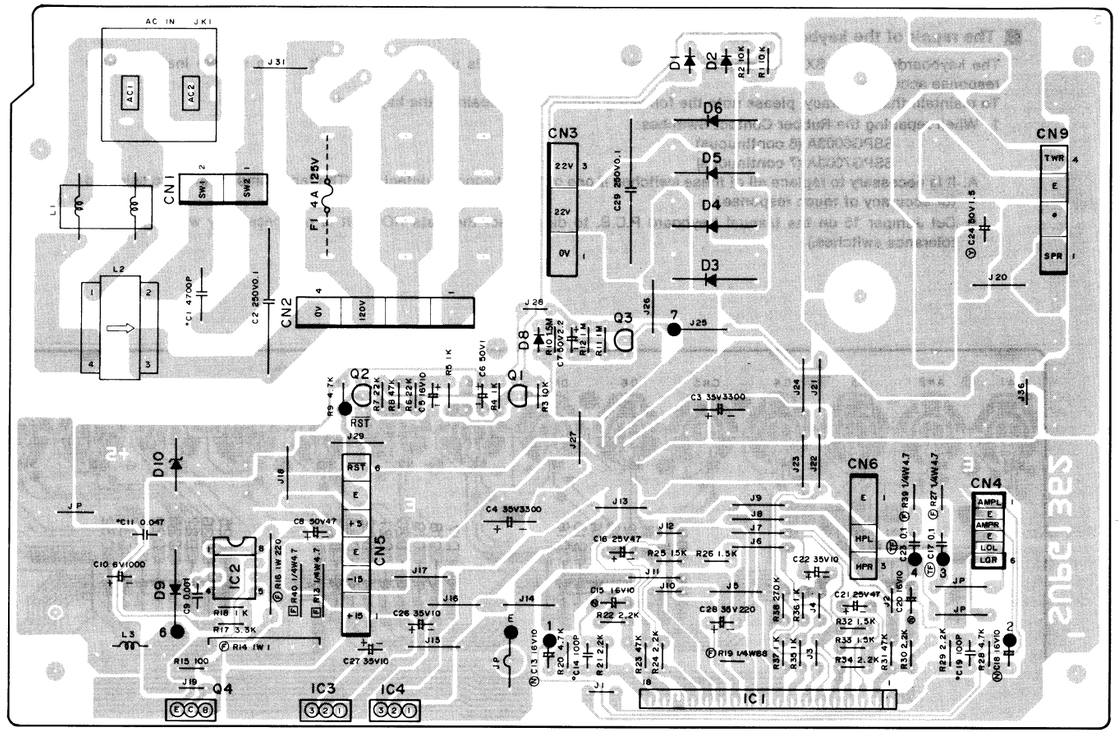


❹ Line Out (



• Products for (M) and (MC) areas. SXPG1362141





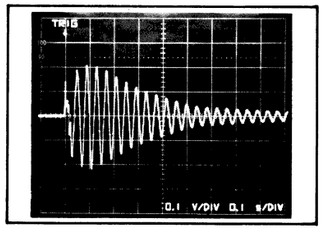
NOTES:

- IC'S
  - IC1: SVIGS4132M2M
  - IC2: SVIGM5291P
  - IC3: SVIGM5F7815
  - IC4: SVIGM5F7915
- TRANSISTORS
  - Q1, 2: 2SC2320LFG
  - Q3: 2SA1015-GR
  - Q4: 2SB953AQP
- DIODES
  - D1, 2: SVDGERA1502Y
  - D3~6: SVDS3V20
  - D7, 8: MA165TA5
  - D9: SVDGRK14
  - D10: MA2062LF
- FUSES
  - F1: XBA1C40NU100

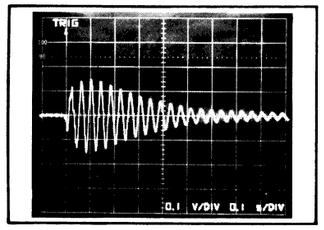
■ Measuring Conditions

- Tone ..... Piano I
- Chorus ..... OFF
- Keyboard ..... C_{52}
- Main Volume ..... Max.
- Brilliance ..... Mellow

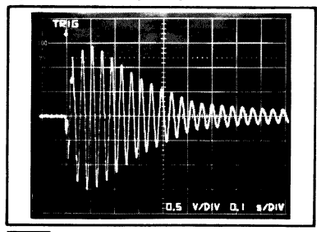
❶ Lch



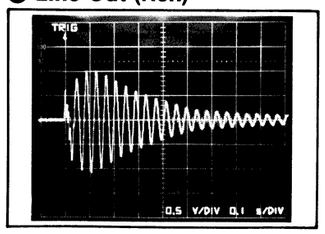
❷ Rch



❸ Line Out (Lch)



❹ Line Out (Rch)



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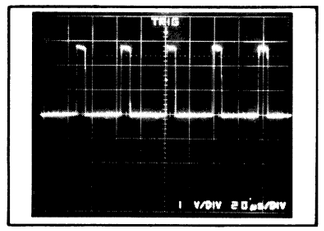
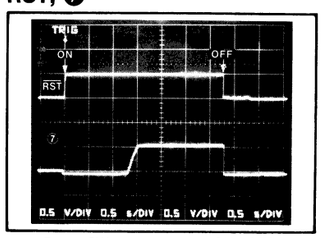
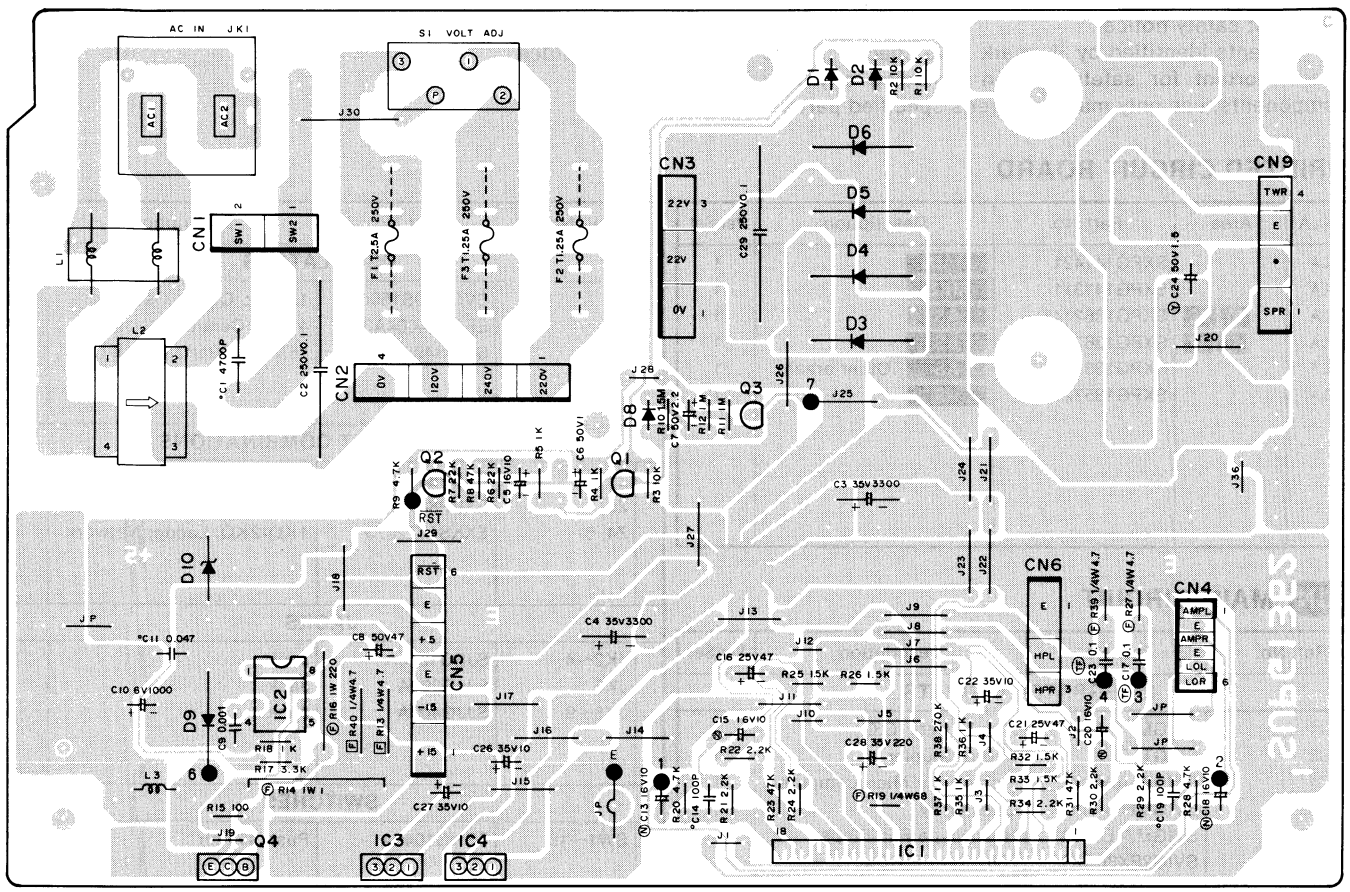


RST, ❼



- Power SW ..... ON–OFF

• Products for (XL) and (XR) areas **SXPG1362131** • Except for (XL) (XR) (M) (MC) areas **SXPG1362121**

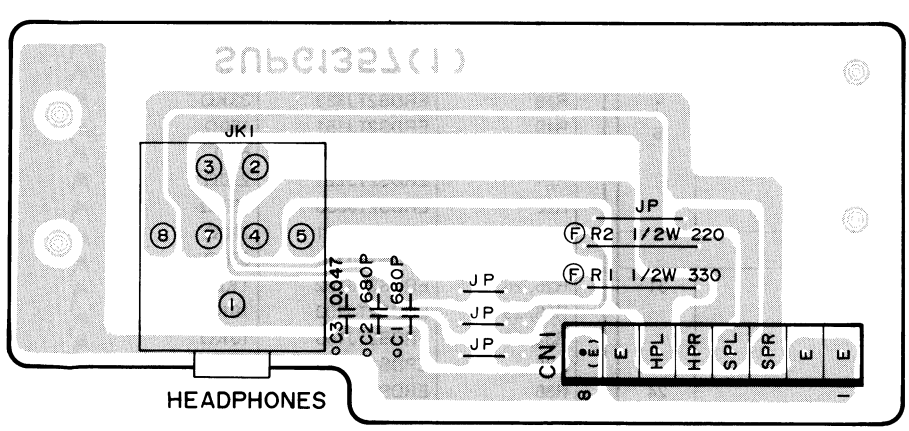


NOTES:

- IC'S
  - IC1: SVIGS4132M2M
  - IC2: SVIGM5291P
  - IC3: SVIGM5F7815
  - IC4: SVIGM5F7915
- TRANSISTORS
  - Q1, 2: 2SC2320LFG
  - Q3: 2SA1015-GR
  - Q4: 2SB953AQP
- DIODES
  - D1, 2: SVDGERA1502Y
  - D3~6: SVDS3V20
  - D7, 8: MA165TA5
  - D9: SVDGRK14
  - D10: MA2062LF
- FUSES
  - F1: XBA2C25TB0
  - F2, 3: XBA2C12TB0

HP HEADPHONES CIRCUIT BOARD

SXPG135721



REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

Notes:

1. Printed circuit board assembly with mark (NLA) is not longer available after production discontinuation of the complete set.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	NLA	Area	Part No.	Description	Per/Set
○	NLA		SXPG141421	MAIN	1
○	NLA		SXPG141311	MKB	1
○	NLA	M MC	SXPG1362141	AS	1
○	NLA	XL XR	SXPG1362131	AS	1
○	NLA		SXPG1362121	AS Other areas	1
○	NLA		SXPG135721	HP	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUITS		
	IC1	SVIGM74LS07	Hex Buffers (O.C.)	1
○	IC3	SVIGTLP513	Photo Coupler	1
	IC4	SVIG7810HCW	1 chip 8 bit Microcomputer	1
	IC5	SVIGM603A114	Gate Array	1
	IC7~10	SVIGM74LS174	Hex D-type Flip-Flops	4
○	IC11	SVIG2PX30AX1	256K bit EP ROM	1
	IC13	SVIGD446C25	16K bit SRAM	1
	IC14, 19	MN6635	Digital Sound Processor	2
	IC15, 21	SVIGBA9221	12 bit D-A Converter	2
	IC16, 22	SVIGM5238L	Operational Amplifier	2
	IC17, 23	SVIGT74H4051	8-channel Multiplexer	2
○	IC18	SVIGU3C04165	4M bit Mask ROM	1
	IC20, 41~43, 46, 47, 51, 52	SVIGM5218L	Operational Amplifier	8
	IC24~39	SVIGM74H4066	Quad Bilateral Switches	16
	IC44	SVIGMSM4011	2-input NAND Gate	1
	IC45	MN3009	BBD (256 stages)	1
	IC50	SVIGLM1894N	Dynamic Noise Reduction	1
	IC53	SVIGM74LS138	Decoder	1
		TRANSISTORS		
S	Q1	2SA1015-GR	2SA933STRS	1
	Q2	2SA830SB		1
S	Q3	2SC2320LFG	2SC1310FG	1
	Q4, 5, 7, 8, 11, 12	2SJ105GR		6
		DIODES		
	D9~15, 20~39, 67, 68, 71, 73	MA165TA5		31
○	D40~63	LN282R	LED (Red)	24

Ref. No.	Part No.	Description	Per/Set
	OSCILLATORS		
X1	SVQG49S1500T	15MHz, Quartz Oscillator	1
X2	EF0FC4004A3	4MHz, Ceramic Oscillator	1
X3	SVQG49S1600T	16MHz, Quartz Oscillator	1
	COMPONENT COMBINATIONS		
Z1, 2	EXBP88472JM	4.7KΩ×8	2
Z3	EXBP86472JM	4.7KΩ×6	1
Z4, 5	EXKS14Z2073	1KΩ/2KΩ, Ladder Network	2
	JACKS		
JK2~4	SJSG1370A	Jack	3
JK5	SJJG390A	Jack	1
JK6~9	SJJG400A	Jack	4
	SWITCHES		
SW1~15	SSHG1046A	Push switch	15
	VARIABLE RESISTORS		
○ VR2	EWD06910B53G	5KΩ B, Main Volume	1
VR3	EVA06215B55G	500KΩ B, TUING VOLUME	1
	SEMI-FIXED RESISTOR		
VR1	EVSG0E1B223A	22KΩ B	1
	RESISTORS		
R11 ⚠	ERD2FCJ6R8	6.8Ω, 1/4W, Fuse Type	1
R12, 13	ER0S2TKF1001	1KΩ, ±1%	2
R14	ERDS2TJ102	1KΩ	1
R15	ERDS2TJ151	150Ω	1
R16	ERDS2TJ680	68Ω	1
R17	ERDS2TJ221	220Ω	1
R18	ERDS2TJ333	33KΩ	1
R19	ERDS2TJ151	150Ω	1
R20	ERDS2TJ680	68Ω	1
R21	ERDS2TJ221	220Ω	1
R22	ERDS2TJ333	33KΩ	1
R23	ERDS2TJ221	220Ω	1
R24	ERDS2TJ331	330Ω	1
R25, 26	ERDS2TJ102	1KΩ	2
R28, 29	ERDS2TJ103	10KΩ	2
R32, 33	ERDS2TJ103	10KΩ	2
R35	ERDS2TJ332	3.3KΩ	1
R36	ERDS2TJ183	18KΩ	1
R37~39	ERDS2TJ472	4.7KΩ	3
R40, 41	ERDS2TJ103	10KΩ	2

Ref. No.	Part No.	Description	Per/Set
R43	ERDS2TJ105	1MΩ	1
R44	ERDS2TJ102	1KΩ	1
R45~47 ⚠	ERD2FCG100	10Ω, 1/4W, Fuse Type	3
R48	ERDS2TJ223	22KΩ	1
R49	ERDS2TJ333	33KΩ	1
R50	ERDS2TJ473	47KΩ	1
R51	ERDS2TJ472	4.7KΩ	1
R52~75	ERDS2TJ331	330Ω	24
R78, 79	ERDS2TJ471	470Ω	2
R80	ERDS2TJ183	18KΩ	1
R81, 82	ER0S2TKF4700	470Ω, ±1%	2
R83	ERDS2TJ151	150Ω	1
R84, 85	ERDS2TJ331	330Ω	2
R86	ERDS2TJ473	47KΩ	1
R87	ERDS2TJ151	150Ω	1
R88, 89	ERDS2TJ331	330Ω	2
R90	ERDS2TJ473	47KΩ	1
R91	ERDS2TJ151	150Ω	1
R92, 93	ERDS2TJ331	330Ω	2
R94	ERDS2TJ473	47KΩ	1
R95	ERDS2TJ151	150Ω	1
R96, 97	ERDS2TJ331	330Ω	2
R98	ERDS2TJ473	47KΩ	1
R99	ERDS2TJ151	150Ω	1
R100, 101	ERDS2TJ331	330Ω	2
R102	ERDS2TJ473	47KΩ	1
R103	ERDS2TJ151	150Ω	1
R104, 105	ERDS2TJ331	330Ω	2
R106	ERDS2TJ473	47KΩ	1
R107	ERDS2TJ151	150Ω	1
R108, 109	ERDS2TJ331	330Ω	2
R110	ERDS2TJ473	47KΩ	1
R111	ERDS2TJ151	150Ω	1
R112, 113	ERDS2TJ331	330Ω	2
R114	ERDS2TJ473	47KΩ	1
R115, 116	ERDS2TJ472	4.7KΩ	2
R117	ERDS2TJ102	1KΩ	1
R118, 119	ERDS2TJ471	470Ω	2
R120	ERDS2TJ183	18KΩ	1
R121, 122	ER0S2TKF4700	470Ω, ±1%	2
R123	ERDS2TJ151	150Ω	1
R124, 125	ERDS2TJ331	330Ω	2
R126	ERDS2TJ473	47KΩ	1
R127	ERDS2TJ151	150Ω	1
R128, 129	ERDS2TJ331	330Ω	2
R130	ERDS2TJ473	47KΩ	1
R131	ERDS2TJ151	150Ω	1
R132, 133	ERDS2TJ331	330Ω	2
R134	ERDS2TJ473	47KΩ	1
R135	ERDS2TJ151	150Ω	1
R136, 137	ERDS2TJ331	330Ω	2
R138	ERDS2TJ473	47KΩ	1
R139	ERDS2TJ151	150Ω	1
R140, 141	ERDS2TJ331	330Ω	2
R142	ERDS2TJ473	47KΩ	1
R143	ERDS2TJ151	150Ω	1
R144, 145	ERDS2TJ331	330Ω	2
R146	ERDS2TJ473	47KΩ	1
R147	ERDS2TJ151	150Ω	1
R148, 149	ERDS2TJ331	330Ω	2
R150	ERDS2TJ473	47KΩ	1
R151	ERDS2TJ151	150Ω	1
R152, 153	ERDS2TJ331	330Ω	2
R154	ERDS2TJ473	47KΩ	1
R155	ERDS2TJ563	56KΩ	1
R156	ERDS2TJ682	6.8KΩ	1
R157, 158	ERDS2TJ473	47KΩ	2
R159	ERDS2TJ563	56KΩ	1

Ref. No.	Part No.	Description	Per/Set
R160, 161	ERDS2TJ393	39KΩ	2
R162	ERDS2TJ183	18KΩ	1
R163	ERDS2TJ682	6.8KΩ	1
R164	ERDS2TJ222	2.2KΩ	1
R165, 166	ERDS2TJ393	39KΩ	2
R167, 168	ERDS2TJ223	22KΩ	2
R169	ERDS2TJ105	1MΩ	1
R170	ERDS2TJ223	22KΩ	1
R171	ERDS2TJ473	47KΩ	1
R172	ERDS2TJ105	1MΩ	1
R173	ERDS2TJ223	22KΩ	1
R174	ERDS2TJ104	100KΩ	1
R175	ERDS2TJ103	10KΩ	1
R176	ERDS2TJ183	18KΩ	1
R177	ERDS2TJ393	39KΩ	1
R178	ERDS2TJ104	100KΩ	1
R179	ERDS2TJ333	33KΩ	1
R180	ERDS2TJ104	100KΩ	1
R181	ERDS2TJ683	68KΩ	1
R182	ERDS2TJ124	120KΩ	1
R183	ERDS2TJ473	47KΩ	1
R184	ERDS2TJ104	100KΩ	1
R185	ERDS2TJ124	120KΩ	1
R186	ERDS2TJ683	68KΩ	1
R187	ERDS2TJ473	47KΩ	1
R188	ERDS2TJ105	1MΩ	1
R189	ERDS2TJ393	39KΩ	1
R190	ERDS2TJ224	220KΩ	1
R194	ERDS2TJ393	39KΩ	1
R195	ERDS2TJ224	220KΩ	1
R204	ERDS2TJ331	330Ω	1
R205	ERDS2TJ681	680Ω	1
R206, 207	ERDS2TJ331	330Ω	2
R208	ERDS2TJ472	4.7KΩ	1
R209~211	ERDS2TJ123	12KΩ	3
R212	ERDS2TJ223	22KΩ	1
R213	ERDS2TJ123	12KΩ	1
R214	ERDS2TJ223	22KΩ	1
R215	ERDS2TJ563	56KΩ	1
R217	ERDS2TJ393	39KΩ	1
R218, 219	ERDS2TJ101	100Ω	2
R220, 221	ERDS2TJ103	10KΩ	2
R222	ERDS2TJ473	47KΩ	1
R223	ERDS2TJ105	1MΩ	1
R224	ERDS2TJ223	22KΩ	1
R225	ERDS2TJ473	47KΩ	1
R226	ERDS2TJ102	1KΩ	1
R227	ERDS2TJ183	18KΩ	1
R228	ERDS2TJ124	120KΩ	1
R229, 230	ERDS2TJ332	3.3KΩ	2
R231	ERDS2TJ124	120KΩ	1
R232	ERDS2TJ153	15KΩ	1
R233	ERDS2TJ154	150KΩ	1
R234	ERDS2TJ103	10KΩ	1
R235	ERDS2TJ333	33KΩ	1
R236, 237	ERDS2TJ223	22KΩ	2
R238	ERDS2TJ473	47KΩ	1
R239	ERDS2TJ223	22KΩ	1
R240, 241	ERDS2TJ104	100KΩ	2
R253	ERDS2TJ152	1.5KΩ	1
R254, 255	ERDS2TJ124	120KΩ	2
R256, 257	ERDS2TJ683	68KΩ	2
R258, 259	ERDS2TJ104	100KΩ	2
R261, 262	ERDS2TJ562	5.6KΩ	2
R263	ERDS2TJ103	10KΩ	1
R264	ERDS2TJ822	8.2KΩ	1
R265~267	ERDS2TJ681	680Ω	3
R268	ERDS2TJ105	1MΩ	1

Ref. No.	Part No.	Description	Per/Set
R269, 270	ERDS2TJ102	1KΩ	2
R271	ERDS2TJ103	10KΩ	1
CAPACITORS			
C1	ECKR1E473ZV	0.047μF	1
C3	ECQV1H104JZ	0.1μF	1
C5, 6	ECKR1E473ZV	0.047μF	2
C7	ECEA1CU101	100μF, 16V	1
C8	ECKR1E473ZV	0.047μF	1
C9	ECEA1CU101	100μF, 16V	1
C10	ECKR1E473ZV	0.047μF	1
C12, 13	ECKR1E473ZV	0.047μF	2
C15	ECEA1HUR47	0.47μF, 50V	1
C17	ECKR1E473ZV	0.047μF	1
C18, 19	ECEA1CU470	47μF, 16V	2
C20	ECEA0JU101	100μF, 6.3V	1
○ C21	ECEA1CK100		1
C22, 24	ECKR1E473ZV	0.047μF	2
C27~29	ECKR1E473ZV	0.047μF	3
C30	ECCR1H221J	220pF	1
C31, 32	ECKR1E473ZV	0.047μF	2
C33	ECEA0JU101	100μF, 6.3V	1
C34	ECQG1H472KZ	0.0047μF	1
C35	ECQG1H102KZ	0.001μF	1
C36	ECQG1H472KZ	0.0047μF	1
C37	ECQG1H102KZ	0.001μF	1
C38	ECQG1H472KZ	0.0047μF	1
C39	ECQG1H102KZ	0.001μF	1
C40	ECQG1H472KZ	0.0047μF	1
C41	ECQG1H102KZ	0.001μF	1
C42	ECQG1H472KZ	0.0047μF	1
C43	ECQG1H102KZ	0.001μF	1
C44	ECQG1H472KZ	0.0047μF	1
C45	ECQG1H102KZ	0.001μF	1
C46	ECQG1H472KZ	0.0047μF	1
C47	ECQG1H102KZ	0.001μF	1
C48	ECKR1E473ZV	0.047μF	1
C49	ECQG1H472KZ	0.0047μF	1
C50	ECQG1H102KZ	0.001μF	1
C51	ECEA0JU101	100μF, 6.3V	1
C52, 53	ECKR1E473ZV	0.047μF	2
C54	ECCR1H221J	220pF	1
C55	ECEA0JU331	330μF, 6.3V	1
C56	ECEA0JU470	47μF, 6.3V	1
C57	ECKR1E473ZV	0.047μF	1
C58	ECEA0JK101	100μF, 6.3V	1
C59	ECQG1H472KZ	0.0047μF	1
C60	ECQG1H102KZ	0.001μF	1
C61	ECQG1H472KZ	0.0047μF	1
C62	ECQG1H102KZ	0.001μF	1
C63	ECQG1H472KZ	0.0047μF	1
C64	ECQG1H102KZ	0.001μF	1
C65	ECQG1H472KZ	0.0047μF	1
C66	ECQG1H102KZ	0.001μF	1
C67	ECQG1H472KZ	0.0047μF	1
C68	ECQG1H102KZ	0.001μF	1
C69	ECQG1H472KZ	0.0047μF	1
C70	ECQG1H102KZ	0.001μF	1
C71	ECQG1H472KZ	0.0047μF	1
C72	ECQG1H102KZ	0.001μF	1
C73	ECKR1E473ZV	0.047μF	1
C74	ECQG1H472KZ	0.0047μF	1
C75	ECQG1H102KZ	0.001μF	1
C76	ECCR1H101J	100pF	1
C77	ECQG1H332KZ	0.0033μF	1
C78	ECCR1H471J	470pF	1

Ref. No.	Part No.	Description	Per/Set
C79	ECCR1H331J	330pF	1
C80	ECCR1H101J	100pF	1
C81	ECCR1H331J	330pF	1
C82	ECCR1H681J	680pF	1
C83	ECCR1H331J	330pF	1
C85	ECEA1HU010	1μF, 50V	1
C86	ECQG1H332KZ	0.0033μF	1
C87	ECEA1HU010	1μF, 50V	1
C88	ECKR1E473ZV	0.047μF	1
C89, 90	ECQG1H102KZ	0.001μF	2
C91	ECQG1H472KZ	0.0047μF	1
C92	ECCR1H101J	100pF	1
C93~96	ECQV1H104JZ	0.1μF	4
C97	ECEA1HU010	1μF, 50V	1
C98	ECCR1H101J	100pF	1
C99	ECQG1H332KZ	0.0033μF	1
C100	ECCR1H101J	100pF	1
C101	ECQG1H332KZ	0.0033μF	1
C105	ECEA1HU010	1μF, 50V	1
C106	ECQV1H104JZ	0.1μF	1
C107	ECQG1H332KZ	0.0033μF	1
C108	ECQV1H104JZ	0.1μF	1
C109	ECQG1H102KZ	0.001μF	1
C110, 111	ECEA1CU470	47μF, 16V	2
C112, 113	ECQG1H472KZ	0.0047μF	2
C114	ECQM1H473KV	0.047μF	1
C115, 116	ECEA1CU100	10μF, 16V	2
C117	ECQV1H474JZ	0.47μF	1
C118, 119	ECCR1H101J	100pF	2
C121	ECEA1HN010S	1μF, 50V	1
C122	ECEA1CU470	47μF, 16V	1
C123	ECEA1CU101	100μF, 16V	1
C124, 125	ECCR1H151J	150pF	2
C126	ECQG1H102KZ	0.001μF	1
C127	ECQV1H104JZ	0.1μF	1
C128, 129	ECQG1H332KZ	0.0033μF	2
C130	ECCR1H151J	150pF	1
C131	ECCR1H101J	100pF	1
C138	ECEA1HU010	1μF, 50V	1
C139, 140	ECEA1HN010S	1μF, 50V	2
C141, 142	ECCR1H101J	100pF	2
C143	ECEA1HN010S	1μF, 50V	1
C145	ECEA1HN010S	1μF, 50V	1
C147	ECQV1H104JZ	0.1μF	1
C148	ECQM1H683KV	0.068μF	1
C149, 150	ECKR1E473ZV	0.047μF	2
C151	ECQV1H224JZ	0.22μF	1
C152	ECKR1E473ZV	0.047μF	1
C153	ECQV1H104JZ	0.1μF	1
C154	ECKR1E473ZV	0.047μF	1
C155, 156	ECQV1H224JZ	0.22μF	2
C157	ECKR1E473ZV	0.047μF	1
C158	ECQV1H224JZ	0.22μF	1

MKB MANUAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUIT		
	IC1	MN50020PGV	Gate Array	1
		DIODES		
S	D1~176	MA162A	MA150IR	176
		OSCILLATOR		
	X1	EF0FC4004A3	4MHz, Ceramic Oscillator	1
		COMPONENT COMBINATION		
	Z1	EXBP88332JM	3.3KΩ×8	1
		SWITCHES		
○	S1~14, 45~58	SSPG6003A	Rubber Switch (6 continuous)	28
○	S15~49, 59~88	SSPG7003A	Rubber Switch (7 continuous)	65
		RESISTORS		
	R1	ERDS2TJ101	100Ω	1
	R2	ERDS2TJ103	10KΩ	1
	R3	ERDS2TJ222	2.2KΩ	1
	R4	ERDS2TJ472	4.7KΩ	1
		CAPACITORS		
	C1	ECCR1H681J	680pF	1
	C2	ECKR1E473ZV	0.047μF	1
	C3	ECCR1H681J	680pF	1
	C4	ECEA1CU470	47μF, 16V	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUITS		
	IC1	SVIGS4132M2M	Power Amplifier	1
	IC2	SVIGM5291P	Switching Regulator	1
	IC3	SVIGM5F7815	Voltage Regulator	1
	IC4	SVIGM5F7915	Voltage Regulator	1
		TRANSISTORS		
S	Q1, 2	2SC2320LFG	2SC1310FG	2
S	Q3	2SA1015-GR	2SA933STRS	1
	Q4	2SB953AQP		1
		DIODES		
	D1, 2 ⚠	SVDGERA1502Y	Rectifier	2
	D3~6 ⚠	SVDS3V20	Rectifier	4
	D8	MA165TA5		1
	D9	SVDGRK14		1
	D10	MA2062LF	Zener	1

	Ref. No.	Part No.	Description	Per/Set
		COILS & LINE FILTER		
	L1 ⚠	SLQG10W2D1	Coil	1
	L2 ⚠	SLTGLF3	Line Filter	1
	L3	SLCG2A121TZ	Coil	1
		JACK		
	JK1 ⚠	SJVD0203B	AC Inlet	1
		SWITCH		
○	S1 ⚠	SSRG100A	Voltage Selector Except for [M], [MC] areas	1
		FUSES		
○	F1 M MC ⚠	XBA1C40NU100	4A, 125V, [M] [MC] areas	1
○	F1 ⚠	XBA2C25TB0	T2.5A, 250V Except for [M], [MC] areas	1
○	F2, 3 ⚠	XBA2C12TB0	T1.25A, 250V Except for [M], [MC] areas	2
		RESISTORS		
	R1~3	ERDS2TJ103	10KΩ	3
	R4, 5	ERDS2TJ102	1KΩ	2
	R6, 7	ERDS2TJ223	22KΩ	2
	R8	ERDS2TJ473	47KΩ	1
	R9	ERDS2TJ472	4.7KΩ	1
	R10	ERDS2TJ155	1.5MΩ	1
	R11, 12	ERDS2TJ105	1MΩ	2
	R13 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R14 ⚠	ERX1ANJP1R0S	1Ω, 1W, Flame-Proof	1
	R15	ERDS2TJ101	100Ω	1
	R16 ⚠	ERG1ANJP221S	220Ω, 1W, Flame-Proof	1
	R17	ERDS2TJ332	3.3KΩ	1
	R18	ERDS2TJ102	1KΩ	1
	R19 ⚠	ERD25FVJ680	68Ω, 1/4W, Flame-Proof	1
	R20	ERDS2TJ472	4.7KΩ	1
	R21, 22	ERDS2TJ222	2.2KΩ	2
	R23	ERDS2TJ473	47KΩ	1
	R24	ERDS2TJ222	2.2KΩ	1
	R25, 26	ERDS2TJ152	1.5KΩ	2
	R27 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R28	ERDS2TJ472	4.7KΩ	1
	R29, 30	ERDS2TJ222	2.2KΩ	2
	R31	ERDS2TJ473	47KΩ	1
	R32, 33	ERDS2TJ152	1.5KΩ	2
	R34	ERDS2TJ222	2.2KΩ	1
	R35~37	ERDS2TJ102	1KΩ	3
	R38	ERDS2TJ274	270KΩ	1
	R39 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R40 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	1
		CAPACITORS		
	C1 ⚠	ECKCVA1472MF	4700pF, Line-Capasitor	1
	C2 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor	1
	C3, 4	ECEA1VU332	3300μF, 35V	2
	C5	ECEA1CU100	10μF, 16V	1
	C6	ECEA1HU010	1μF, 50V	1
	C7	ECEA1HU2R2	2.2μF, 50V	1
	C8	ECEA1HU470	47μF, 50V	1
	C9	ECQG1H102KZ	0.001μF	1
	C10	ECEA0JU102	1000μF, 6.3V	1
	C11	ECKR1E473ZV	0.047μF	1
	C13	ECEA1CN100S	10μF, 16V	1
	C14	ECCR1H101J	100pF	1

	Ref. No.	Part No.	Description	Per/Set
	C15	ECEA1CN100S	10μF, 16V	1
	C16	ECEA1EU470	47μF, 25V	1
	C17	ECQV1H104JZ	0.1μF	1
	C18	ECEA1CN100S	10μF, 16V	1
	C19	ECCR1H101J	100pF	1
	C20	ECEA1CN100S	10μF, 16V	1
	C21	ECEA1EU470	47μF, 25V	1
	C22	ECEA1VU100	10μF, 35V	1
	C23	ECQV1H104JZ	0.1μF	1
○	C24	ECEA50Y1R5	1.5μF, 50V	1
	C26, 27	ECEA1VU100	10μF, 35V	2
	C28	ECEA1VU221	220μF, 35V	1
	C29 ⚠	ECQE2A104MW	0.1μF, 250V	1

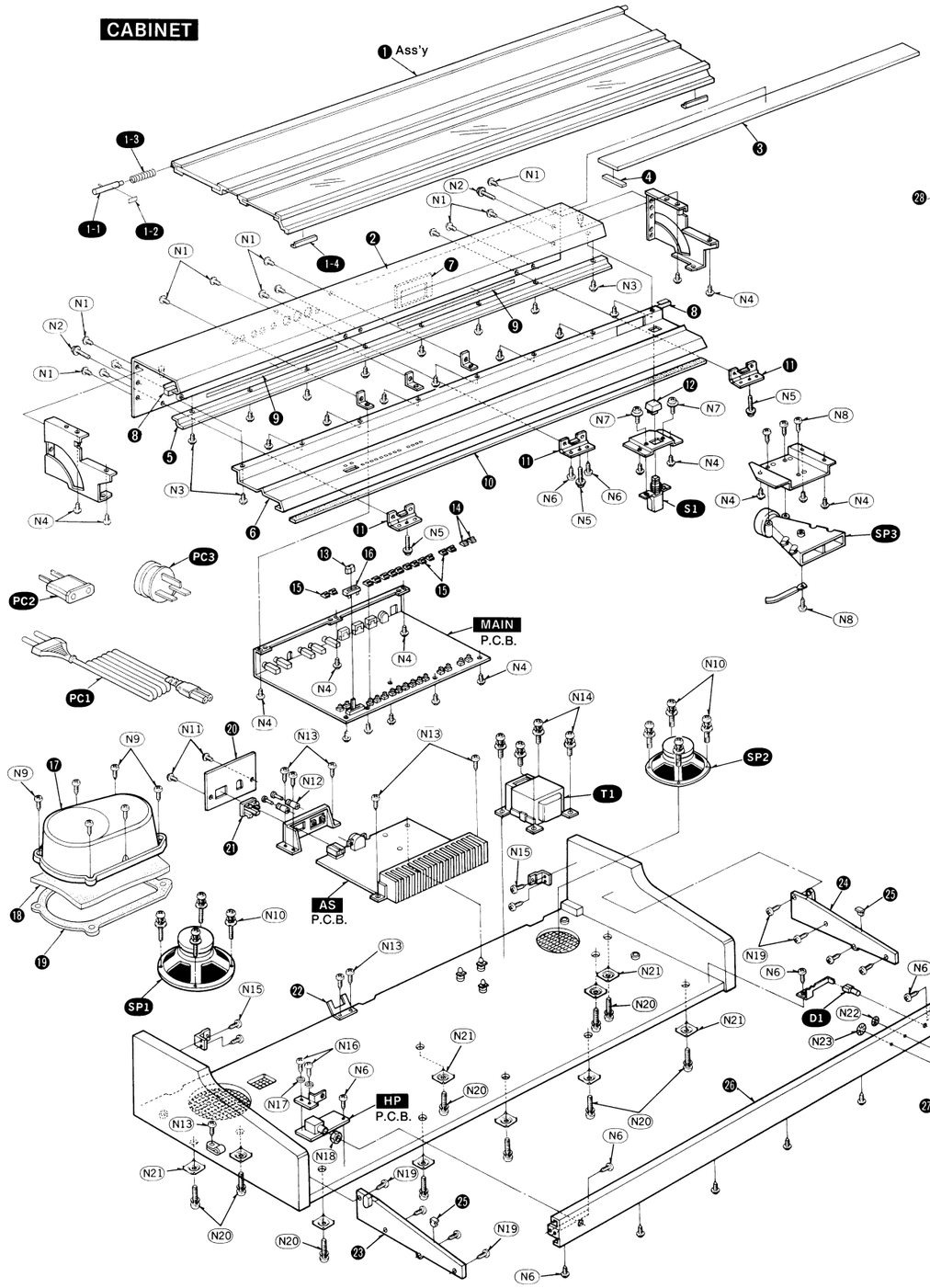
HP HEADPHONES CIRCUIT

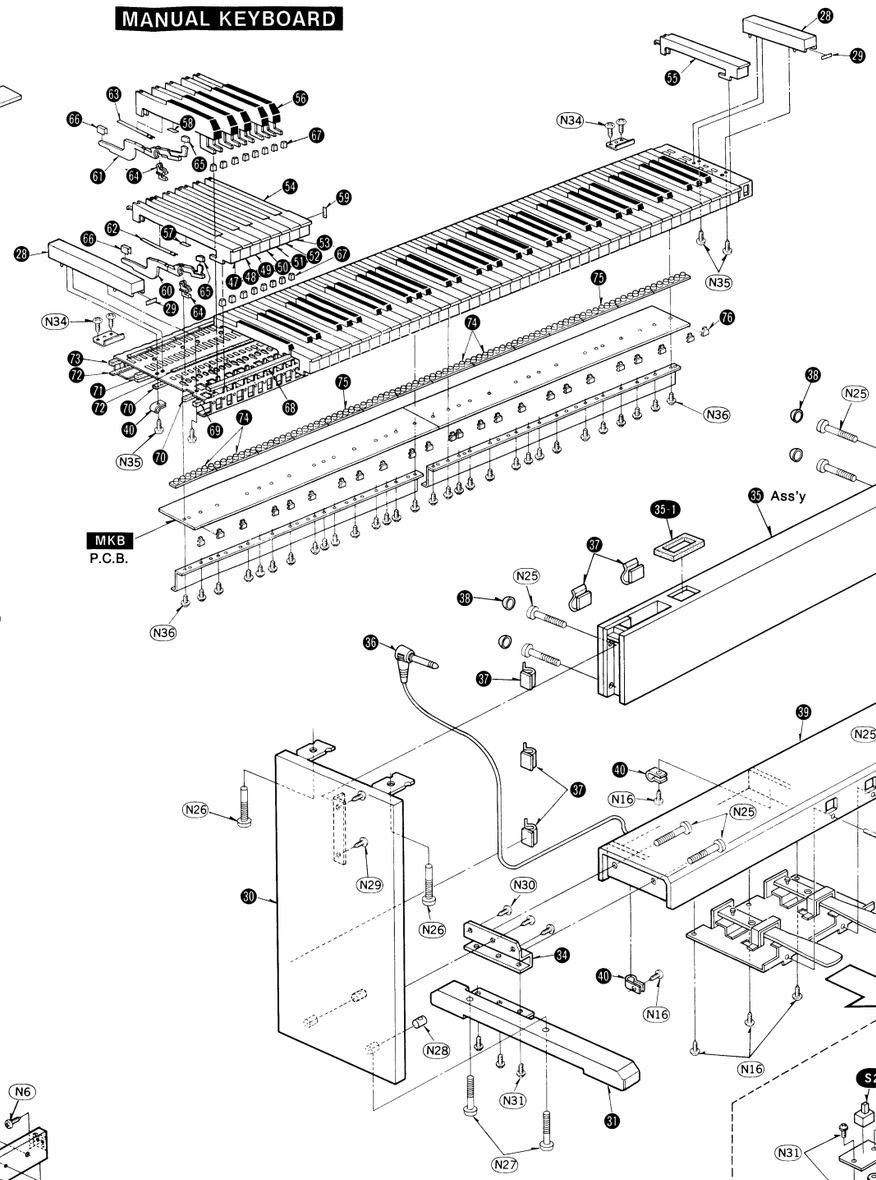
	Ref. No.	Part No.	Description	Per/Set
		JACK		
	JK1	SJJG100A	Jack	1
		RESISTORS		
	R1 ⚠	ERD50FJ331	330Ω, 1/2W, Flame-Proof	1
	R2 ⚠	ERD50FJ221	220Ω, 1/2W, Flame-Proof	1
		CAPACITORS		
	C1, 2	ECCR1H681J	680pF	2
	C3	ECKR1E473ZV	0.047μF	1

■ WIRING PARTS

	Ref. No.	Part No.	Description	Per/Set
○	W1	SWKG03113LTA		1
	W2	SWKG03103ZA		1
○	W3	SWKG06123ZA		1
○	W4	SWKG06124SSA		1
○	W5	SWKG08116ZA		1
○	W6	SWKG1516STA		1

EXPLODED VIEWS OF CABINET





REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

Notes:

1. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. ○ mark are new parts.
3. For part No. with area mark, check the area when placing an order.

■ CABINET & CHASSIS PARTS

Ref. No.	Part No.	Description	Per/Set
SWITCHES			
S1 ⚠	ESB8213V	Power Switch	1
S2	SSHG1034A	Push Switch (Pedal)	2
SPEAKERS			
SP1	EAS16PL403A	16cm, 8Ω	1
SP2	EAS12P241C	12cm, 8Ω	1
SP3	EAS8HH62A	Horn Tweeter, 16Ω	1
TRANSFORMER			
○ T1 M MC ⚠	SLTG5M31	Power Transformer	1
○ T1 ⚠	SLTG5M30	Power Transformer, Other areas	1
POWER INDICATOR			
D1	LN29RP	Power Indicator	1
POWER CORD & PLUG			
PC1 ⚠ M MC XT	SJAG62	Power Cord	1
PC1 ⚠ XL XR	SJAG61	Power Cord	1
PC1 ⚠ EK XS XD	SJAG39	Power Cord	1
PC1 ⚠	SJAG41	Power Cord, Other areas	1
PC2 ⚠ X XT	SJP5213-1	Attachment Plug	1
PC3 XD ⚠	SJPG1350A	Power Plug	1
CABINET PARTS			
○ 1	SKZG8460A	Keyboard Cover Ass'y	1
○ 1-1	⌜SNEG2310B	Shaft	1
○ 1-2	SHSG5930A	Felt	1
○ 1-3	SUSG550A	Spring	1
○ 1-4	⌞SHGG8500A	Rubber Pad	2
○ 2	SGWG1990A	Top Cover	1
○ 3	SKZGE020A	Plank	1
○ 4	SHSG6000A	Felt	1
○ 5	SGXG2930A	Ornament	1
○ 6	SGWG1920A	Control Panel	1
○ 7	SHSG3700A	Felt	1
○ 8	SHSG3670A	Felt	2
○ 9	SHSG3650A	Felt	2
10	SHSG3430A	Felt (Red)	1
11	SBHG180A	Hinge	3
12	SBCG110B	Power Switch Button	1
13	SBNG7050A	Knob (Slide Volume)	1
14	SBCG250B	Push Button (Gray)	2
15	SBCG250C	Push Button (Black)	13
16	SGEG260A	Ornament (Slide Volume)	2
○ 17	SHRG8371A	Speaker Cover	1
18	SHSG9160A	Sound Absorbing Material	1
○ 19	SHRGA7172A	Gasket	1
20 M MC	SMKG3051A	AC Panel	1
20	SMKG3050A	AC Panel, Other areas	1
21 XL XR	SJS9334A	AC Inlet Cover	1
21	SJS9231A	AC Inlet Cover, Other areas	1
○ 22	SUSG560A	Spring	1
○ 23	SKEG7680A	Left Guide	1
○ 24	SKEG7690A	Right Guide	1
○ 25	SHGG8490A	Rubber	2
○ 26	SGXG2871A	Ornament	1
27	SGBG160A	Technics Badge	1
○ 28	SGWG2210B	End Cover Panel	2
○ 29	SHSG3690A	Felt (End Cover Panel)	2
STAND			
○ 30	SKSG2410A	Left Plank	1
31	SKLG250A	Left Leg	1
○ 32	SKSG2420A	Right Plank	1
33	SKLG260A	Right Leg	1
34	SUWG3060A	Metal Fittings	2
○ 35	SKZG7790A	Horn Loaded Cabinet Ass'y	1
○ 35-1	⌜SHRGA7180A	Gasket	1
○ 36	SWPG140A	Pedal Cord	1
37	SHRG9620A	Cord Clamper	5
38	SNEG1760A	Cap	4
○ 39	SKZGD840A	Pedal Box	1
40	SHRG1070A	Cord Clamper	3
41	SUSG440A	Spring	2
42	SHSG2790A	Felt	2
43	SKLG160A	Foot	1
44	SHSG2770A	Felt	2
45	SHSG2750A	Felt	2
46	STBG3100A	Pedal	2
MANUAL KEYBOARD			
○ 47	STBGA1050A	White Key (AA Key)	1
○ 48	STBGA1060A	White Key (B Key)	8
○ 49	STBGA1070A	White Key (C Key)	7
○ 50	STBGA1080A	White Key (D Key)	7
○ 51	STBGA1090A	White Key (E Key)	7
○ 52	STBGA1100A	White Key (F Key)	7
○ 53	STBGA1110A	White Key (G Key)	7
○ 54	STBGA1120A	White Key (A Key)	7
○ 55	STBGA1130A	White Key (CC Key)	1
○ 56	STBG2920A	Black Key	36
○ 57	SHSG3620A	Felt (White Key)	52
○ 58	SHSG3630A	Felt (Black Key)	36
○ 59	SHSG5910A	Felt (White Key)	52
○ 60	STBG9261A	Hammer (White Key)	52
○ 61	STBG9270A	Hammer (Black Key)	36
○ 62	SUSG520A	Spring (White Key)	52
○ 63	SUSG531A	Spring (Black Key)	36
○ 64	STBG9280A	Fulcrum (Hammer)	88

■ PACKING PARTS

	Ref. No.	Part No.	Description	Per/Set
○	65	SHGG9120A	Rubber Cap (Hammer)	88
○	66	SHSG5760A	Felt (Hammer)	88
○	67	SHRG9900A	Key Guide Rubber	88
○	68	SHSG3451A	Felt	2
○	69	SHSG3552A	Felt	2
	70	SHSG2670A	Felt	2
○	71	SHSG3530A	Felt	2
○	72	SHSG3461A	Felt	2
○	73	SHSG9312A	Felt	2
○	74	SSPG7003A	Rubber Switch (7 Continuous)	4
○	75	SSPG6003A	Rubber Switch (6 Continuous)	10
○	76	SHRG9751A	P.C.B. Spacer	24

SCREWS & WASHERS

	N1	XTW3+8LFZ	Screw	13
	N2	SNEG1880A	Screw with Washer	2
	N3	XTW3+8L	Screw	16
	N4	XTV3+8B	Screw	17
	N5	XYN3+F14FZ	Screw with Washer	3
	N6	XTB35+12AFZ	Screw	14
	N7	XYN3+F10FZ	Screw with Washer	2
	N8	XTB4+8A	Screw	4
	N9	XTN5+12A	Screw	6
	N10	XYN3+F20	Screw with Washer	8
	N11	XTW3+8JFZ	Screw	2
	N12	SNEG1700A	Nylon Latch, Except for [M] & [MC] areas	2
	N13	XTB35+12A	Screw	8
	N14	XYN4+F14	Screw with Washer	4
	N15	XTB35+16A	Screw	4
	N16	XTB35+14A	Screw	7
	N17	XWA4B	Washer	2
	N18	XNS12FZ	Nut	1
	N19	XTB3+16AFZ	Screw	8
	N20	XYN5+C25FZ	Screw with Washer	10
	N21	SNEG150B	Washer	10
	N22	SNEG1770A	Reating Ring	1
	N23	SNEG1780A	Reating Ring	1
	N24	XYN4+F16FZS	Screw with Washer	2
	N25	SNEG2280A	Bolt (Black)	8
	N26	SNEG2330A	Bolt (Brown)	4
○	N27	SNEG2380A	Bolt (Yellow)	4
	N28	SNEG1710A	Nut	4
	N29	XTT4+25AFZ	Screw	4
	N30	XTT4+16AFZ	Screw	6
	N31	XTW3+8C	Screw	20
	N32	XSN3+10	Screw	2
	N33	XYN4+C25	Screw with Washer	1
	N34	XTT4+12A	Screw	4
	N35	XTT4+14A	Screw	4
	N36	XTW3+10TFZ	Screw	30

	Ref. No.	Part No.	Description	Per/Set
○	1	SPNG1990A	Upper Cover	1
○	2	SPNG5753A	Upper Pad (Left)	1
○	3	SPNG5754A	Upper Pad (Right)	1
○	4	SPNG5716A	Lower Pad (Left)	1
○	5	SPNG5717A	Lower Pad (Right)	1
○	6	SPNG2010A	Carton Box	1
○	7	SPHG2000A	Protection Sheet	1
	8	SPHG1320A	Protection Sheet	1
	9	SPHG1110A	Polyethlene Bag	1
○	10	SPNG5714A	Left Side Pad	1
○	11	SPNG5715A	Right Side Pad	1
○	12	SPNG5752A	Pad	2
○	13	SPNG1998B	Carton	1
○	14	SPNG2002A	Pad	1
○	15	SPHG2100A	Protection Sheet	2
	16	SPHG1570A	Polyethlene Bag	2
	17	SPHG1580A	Protection Sheet	2
○	18	SPHG2010A	Protection Sheet	2
○	19	SPHG2050A	Polyethlene Bag	2
	20	SPSG40A	Band	4

INSTRUCTION BOOK

○	21	EN EL	SQFGA990	Instruction Book	1
○	21	M	SQFGA980	Instruction Book	1
○	21		SQFGA1010	Instruction Book, Other areas	1
○	22		SQFGA21450	Instruction Book (Stand)	1

PACKING